South Korea's Strategic Interests in Antarctica

A thesis submitted in fulfilment of the requirements for the Degree of Master of Arts in Political Science

by Kim Seungryeol

Political Science Programme, School of Social and Political Sciences

University of Canterbury

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Table of contents

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List of Figures

Abstract

The Republic of Korea (ROK) joined the Antarctic Treaty in 1986 as the 33rd member and became a consultant party in 1989. Despite its geographical remoteness from the region and the geopolitical pressures it faces at home, ROK has made great progress in its scientific research in Antarctica as well as the Arctic. In particular, since the inauguration of the Lee Myung Bak administration in 2008, Seoul has accelerated its commitment to polar research by announcing that it would set up a second permanent base in the Antarctic continent and build a new 7,000 ton ice breaker.

South Korea is the 9th largest economy in the world and is now seeking ways to expand its global political influence. The Korean government sees its expansion into Antarctica and the Arctic as part of its path to a greater global leadership role. This thesis explores the reasons behind South Korea's increased involvement in Antarctica, while referencing the activities of its Arctic programme. It profiles various bodies involved in maintaining and negotiating ROK's Antarctic presence and voice on Antarctic affairs; it discusses Seoul's core interests in the Antarctic continent and the polar regions overall, which help to shape its Antarctic policy.

1.0 Introduction

…I would like to express my sincere respect and gratitude, on behalf of all Koreans, for your research in such a harsh environment for the sake of Korea's future. Your devotional research activities will be a practical basis upon which we increase our national interests and contribute to global society.[1]

Overview

Since the Republic of Korea first entered into Antarctica in the late 1970s, it has steadily not only carried out its Antarctic scientific research, but also operated its Antarctic enterprise. Despite all the rapid changes of domestic situations such as modernisation and democratisation of the society, and external challenges including the security on the Korean Peninsula threatened by North Korea and the Asian Financial Crisis, it has increased its presence in the Antarctic Region throughout the period. In particular, the two latest governments of South Korea have made a massive investment in developing its polar infrastructure such as the building of its icebreaker 'Araon', the construction of its second Antarctic continental station 'Jangbogo' and the expansion of its polar research institute.

In addition to the physical investment in the development of its polar infrastructure, the current Korean government has been seeking to popularise Antarctica and its activities in the region in order to win public consensus and justify its on-going efforts. Understanding that the Protocol on Environmental Protection to the Antarctic Treaty System is scheduled to be reviewed in 2048 and it would be extremely difficult to continue pursuing its long-term strategy or interests in Antarctica without public support, the government has actively promoted the government-driven Antarctic activities through various channels, appealing to the nationalistic sentiment of the people of Korea. One of the government's recent efforts is shown in its entire support for a popular TV entertainment programme to be filmed in Antarctica. The producers of a popular Korean TV show with its average ratings of 40 percent called "One Day Two Nights" have been preparing for shooting a two-week episode in Antarctica for the last five months. They have been discussing working-level issues with

[1] Korean Presidency, "The collection of President Lee's speeches (1)," *Korean Presidency*, No 208, 2009, pp.289-290.

the Korea Polar Research Institute (KOPRI), the Ministry of Foreign Affairs and Trade, Ministry of Environment and Ministry of Land, Transport and Maritime Affairs.[2] However, this ambitious project has aroused a lot of controversies among its viewers. The first controversy is on the original intention of the show. This programme produced by the Korean Broadcasting System (KBS) is designed to introduce its viewers to every hidden but beautiful part of Korea. Many of the viewers have been opposed to the plan for the show to be shot on location in Antarctica, which is not a Korean territory. In contrast, some viewers have argued that shooting the show around the Korean permanent base, King Sejong Station, does not disagree with the original intention of the programme.

Despite those controversies on the original intention of the show and the expected enormous cost, KBS has enjoyed full support from the government departments concerned and continued its preparation for shooting a historic episode in Antarctica. In the meantime, Seoul city hosted a large-scale event with its theme of "Experience Antarctica" in the Seoul Square in front of the City Hall, 19 December 2009 to 15 February 2010.[3] Sponsored by the KOPRI and the Korea Supporters Association for Polar Research (KOSAP), Seoul city built six buildings and organised a programme where the visitors become research members of King Sejong Station and obtain a certification as an honorary research member after learning about Antarctica and experiencing the life in the region. As a result, the two recent government-driven events have succeeded in arousing the citizens' notions of Antarctica and relating Korea to the Polar Regions in the people's minds.

Aims of this Research

Along with the increasing physical investment, the public consensus and justification will enable the Korean government to continue operating in Antarctica in pursuit of its long-term strategic interests in the region. What, then, are the Seoul's aims in Antarctica and how could it achieve its goals? This thesis outlines South Korea's core strategic interests in the Polar Regions, particularly in Antarctica, and how those interests determine its Antarctic policy. As a relatively new player in Antarctica, the ROK has recently begun in earnest to pursue its

[2]"칠레 지진 여파, `1 박 2 일` 남극행 잠정 유보," ("The earthquake in Chile holds 'One Day Two Nights' suspended from its trip to Antarctica,"), *EDaily*, March 2, 2010.
[3] Department of Culture Policy, Seoul City, *2010 Culture and Art Programmes offered by Seoul City*, Seoul, December 27, 2009.

long-term strategic interests in the region. In this regard, the ultimate aim of this thesis is focused on defining and exploring the core interests of South Korea, rather than on measuring the outcome at the early stage of its carrying out the long-term strategy. More specifically, this thesis is aimed at providing answers to the questions: 'what are the scientific and economic interests of Seoul's Antarctic enterprise?' and 'what is the role and meaning of Antarctica in Korea's domestic and international politics?'As Korea is a relatively new comer to the Polar Regions, very little research has been done on its polar policy and the implication of its presence in the regions. This thesis lays the foundation for understanding the meaning of Korea's involvement in the Polar Regions by introducing various aspects of the nation's polar enterprise and strategic interests.

Methodology

As mentioned above, there has been very little scholarly work or other forms of preliminary research on South Korea and Antarctica. In this sense, this thesis analyses data gained from virtually every possible publicly-available source such as interviews with Korean polar scientists and relevant government officials, science journals, official reports and websites, and newspaper articles on Korea's polar activities issued from the 1970s to the present day.

Thesis Outline

The first part of the thesis surveys the history of South Korean polar research, the key government agencies involved in South Korea's polar programme, and the role they each play in polar decision-making. The second part discusses the role of Antarctica in South Korean science, exploring Seoul's main Antarctic research fields and achievements. In the third section, the thesis examines the economic aspects of South Korean research and development in Antarctica. The fourth and fifth parts discuss the role of Antarctica in South Korea's domestic politics and international politics respectively, investigating its domestic and foreign policies toward Antarctica. In the final section, the thesis summarises the findings and offers a prospect for the future Antarctic policy of South Korea.

2.0 South Korea and Antarctica

2.1 The History of South Korea's Polar Research

It was in 1978 that South Korea officially entered into the Antarctic region. Sponsored by the Fisheries Agency in order to test the operation of catching krill in the Antarctic Ocean, a fishing company (Namguksusan) caught krill off the coasts of Enderby Land and Wilkes Land over the period of 1978 and 1979.[4]

In 1985, Sea Explorers of Korea went on an expedition to Antarctica accompanied by two researchers from the Korea Ocean Research and Development Institute (KORDI). They stayed on King George Island for three weeks, learning about the construction and operation of foreign bases and collecting information about the natural environment of the island to prepare for the future construction of a permanent station.[5] A year later, South Korea joined the Antarctic Treaty as the 33rd member. North Korea applied for a membership to the Antarctic Treaty around the time of South Korea's application and became the 35th member through the mediation of the United States.[6]

In 1987, Seoul decided to construct an Antarctic research base. The KORDI organised a polar research office and began conducting a preliminary research in preparation for the construction of the new base. The researchers from the polar research office explored several candidate locations for the new base around King George Island in cooperation with Hyundai Construction and the Ministry of Foreign Affairs.[7] Meanwhile, the KORDI founded the Korea National Committee on Antarctic Research (KONCAR), which established a domestic system for Antarctic research.[8]

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[4] Jang, Soon-gun, Captain of the 8th Winter Research, "The Antarctic Continent and Korea's Antarctic Research," *Gwahak Sasang*, No.34, 2000, pp.184-199.
[5] Jang, Soon-gun, Captain of the 8th Winter Research, *The Dream of Antarctic Exploration*, (Seoul: Science Books, 2004), pp.98-99.
[6] http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_politics/antarcticnearth_politics_history/antarcticnearth_politics_history.cms.
[7] http://www.kopri.re.kr/www/whypolar/researchhistory/researchhistory.cms.
[8] http://www.kordi.re.kr/chongseo/vol7/vol7_17.asp.

Hyundai Engineering designed the buildings and facilities of the base.[9] In 1988, the construction of the first Korean Antarctic station, King Sejong Station, was completed on the Barton Peninsula of King George Island, with its initial objectives of meteorological observation and earthquake records.[10] King Sejong Station is named after Sejong the Great (1397-1450), well-known for his effort to end the dependence on China in terms of culture and knowledge by creating the Korean alphabet, and to promote many new developments in the area of science.

The Antarctic Science Research Team was organised by the Ministry of Science and Technology in 1988, joined by ocean researchers and researchers from Korean universities.[11] The first team was dispatched to conduct research on the natural environment surrounding King Sejong Station. Since then, every year the research team has continually carried out scientific studies at the Station, expanding its research topics and fields. After the first year, Seoul held the First International Antarctic Science Symposium in October 1988, inviting 40 scholars from 10 leading countries in Antarctic research.[12] In the following year, South Korea obtained the status of a consultant party in the Antarctic Treaty for the performance of King Sejong Base.[13]

In 1990, the Republic of Korea (ROK) became the 22nd regular member at the 21st Scientific Committee on Antarctic Research (SCAR)[14] and held the Second International Antarctic Science Symposium.[15] In the same year a professional academic journal on Antarctica, called *'Hankukkugjiyungu (Korea Polar Research)'*, was first published with the objective of providing Antarctic research dissertations and Antarctica-related news.[16] In 1991, the earth station of the Korea's first satellite, called "KIT-SAT", was installed at King Sejong Base, which has contributed to Korea's communication research.[17] Year 1991 was the year of Korea's preparation for the take off of its Antarctic research. Korea's first research ship,

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[9] Oh Ki-se, 남극탐험(Antarctic Exploration), Sea Explores of Korea, May 29, 2001, http://www.sekva.or.kr/ttboard/ttboard.cgi?act=view&code=4&bname=OBM00JD&page=5.
[10] KOPRI, *The 20 Years History of the King Sejong Station*, (Incheon: KOPRI, 2008) pp.79-80.
[11] http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_politics/antarcticnearth_politics_history/antarcticnearth_politics_history.cms.
[12] KOPRI, *The 20 Years History of the King Sejong Station*, (Incheon: KOPRI, 2008) p.155.
[13] http://www.kopri.re.kr/www/about/kopri_history/kopri_history.cms.
[14] Ibid.
[15] KOPRI, *The 20 Years History of the King Sejong Station*, (Incheon: KOPRI, 2008) pp.155-160.
[16] Jang, Soon-gun, Captain of the 8th Winter Research, *The Dream of Antarctic Exploration*, (Seoul: Science Books, 2004), p.135.
[17] http://www.kopri.re.kr/index.jsp.

called *'Onnuri'*, was launched and started to carry out life science and geology research. Unlike many other foreign ships South Korea had rented, Onnuri had an amount of high-tech oceanography and geophysics research equipment in order to collect high quality data.[18]

Since 1999, the ROK has expanded its polar research to the Arctic region. South Korea began its Arctic research jointly with China by dispatching researchers to Chinese bathyscaphes.[19] After that, ROK conducted joint ocean research with Russia.[20] In 2002 Dasan Station was established at Ny-Alesund, on the high Arctic island of Spitsbergen, part of the Svalbard Archipelago.[21] Dasan Base is named after Dasan (pen name) Jeong Yag-Yong (1762-1836), best known for his practical science. The main research fields of the base are the upper atmosphere, space research, glacier research and resources development.[22]

In 2003, Seoul announced a plan to build a new 10,000 ton ice breaker, *Araon*, which would be used as a multi-purpose vessel for transportation, research and housing.[23] The name of *Araon* literally means "sail all over the world". In 2005, the basic design was made by Samsung Heavy Industries and the execution design by STX Offshore & Shipbuilding.[24] The construction of *Araon*, which cost a billion US dollars, was completed in 2009 and *Araon* started sea trials soon after. On 12 January 2010 *Araon* first sailed to Antarctica via Lyttelton Harbour in New Zealand to test its ice-breaking ability and explore the candidates for the second permanent base on the continent.[25] The setting-up of the second Antarctic base was decided in 2006 with the objective of establishing an Antarctic infrastructure for researching global climate change and finding solutions to global warming. The construction of the new permanent base is expected to be completed in 2011.[26]

2.2 South Korea's Antarctic Organisations

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[18] Song Won-oh, "Onuriho," *Hangman 45*, 1992, pp.34-40.
[19] http://www.kopri.re.kr/index.jsp.
[20] Ibid.
[21] Ministry of Land, Transport and Maritime Affairs, 북극연구의 메카, 다산기지(*The Mecca of Arctic Research-the Dasan Station)*, Seoul, 2009.
[22] Kang Sung-ho, "지금, 북극 다산기지에서는 :마지막 남은 인류 자원의 보고 '북극'," ("Now, the Dasan Station: the Arctic, the Last Repository of Resources,"), Gwahakqwa Gisul, No.452, 2007, pp.70-73.
[23] Ministry of Environment and Ministry of Land, Transport and Maritime Affairs, 쇄빙연구선 아라온호 본격 건조 실시(*Araon, the Icebreaker, is Ready to Build*) , Seoul, 2008.
[24] Ibid.
[25] http://www.kopri.re.kr/www/koprizone/notice/userBbs/bbsView.do?bbs_cd_n=13&bbs_seq_n=448.
[26] http://www.kopri.re.kr/infra/continental/continental_about/continental_about.cms.

Korean Antarctic research is conducted in cooperation with several government departments and private research institutes. Among them, the most officially representative of Korea's Antarctic research body is the Korea Polar Research Institute (KOPRI), an affiliated organisation of the Korea Ocean Research & Development Institute (KORDI), funded by the Ministry of Land, Transport and Maritime Affairs and the Ministry of Education, Science and Technology.[27]

The major task of the Ministry of Land, Transport and Maritime Affairs in regard to its development of Antarctic policy is to establish the Basic Plan of the Antarctic Research Activity Promotion (Namgukyunguhwaldongjinhungkibonkyehoik) every five years under Article 11 of the Antarctic Activity and Environmental Protection Law, and conduct polar exploration and establishment of polar infrastructure in accordance with an enforcement plan by year.[28] In the process of establishing the basic plan of Antarctic research activity, the department takes into consideration the opinions from central administrative agencies concerned, such as the Ministry of Environment and the Ministry of Education, Science and Technology, and KOPRI.[29] In particular, the Ministry of Land, Transport and Maritime Affairs has been making steady investment in the KOPRI and reflecting the research outcomes in its policy-making.[30]

The KOPRI was founded in 1987 as the polar research bureau of the Korea Ocean Research & Development Institute (KORDI) and reorganised as the polar research centre in 1990.[31] After being raised to the status of the polar research institute in 2003, it became an independent institute affiliated to KORDI in 2004.[32] The objective of KOPRI is to contribute to the nation's political and economic interests in the Arctic and Antarctica, and improve the nation's international status by continuously monitoring the environmental changes of the

[27] Phone interview with Lee Jinyong,Team Leader of Office of Research & Management, KORDI, March 26, 2010.
[28] Letter interview with Um Kiho, Manager of Maritime Territory Development Office, Ministry of Land, Transport and Maritime Affairs, March 16, 2010.
[29] Ibid.
[30] Phone interview with Um Kiho, Manager of Maritime Territory Development Office, Ministry of Land, Transport and Maritime Affairs, April 14, 2010.
[31] http://www.kopri.re.kr/www/about/kopri_history/kopri_history.cms.
[32] Ibid.

Polar Regions, and securing vested rights to the development of the resources.[33] In this vein, the KOPRI took on the projects of constructing the King Sejong station in Antarctica in 1988 and the Dasan Base in the Arctic in 2002. It is now working on the construction of the Antarctic continental station.

Unlike other research institutes which are competing for a small amount of government subsidy with their research results,[34] the KOPRI is guaranteed a significant amount of fixed funding (about 50 per cent of its total income) by the Korean government and also makes other profits from the government-requested research by the Ministry of Land, Transport and Maritime Affairs.[35] The government funding has increased by over 400 percent from US$9 million in 2004 to US$40 million in 2010, whereas the income from the government-requested projects had risen from US$2 million in 2004 to US$33million in 2009.[36]

The KOPRI has five main tasks to carry out. The first role of the KOPRI is to conduct research of basic and high-tech applied science in the Polar Regions. Secondly, it operates the Arctic and Antarctic stations, and supports their research activities. The KOPRI's third task is to collaborate with domestic and foreign polar research institutes, and train professionals. The KOPRI is also responsible for the development and execution of polar research programmes in cooperation with domestic Academy, Institute and Business Circles. Lastly, the KOPRI promotes the polar research activities to the public.[37]

[33] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.
[34] Ibid.
[35] Phone interview with Lee Hyungun, [Team Leader] Senior Specialist of Planning & Budget Team, KOPRI, March 26, 2010.
[36] http://www.kopri.re.kr/index.jsp.
[37] http://www.kopri.re.kr/www/about/kopri_vision/kopri_vision.cms.

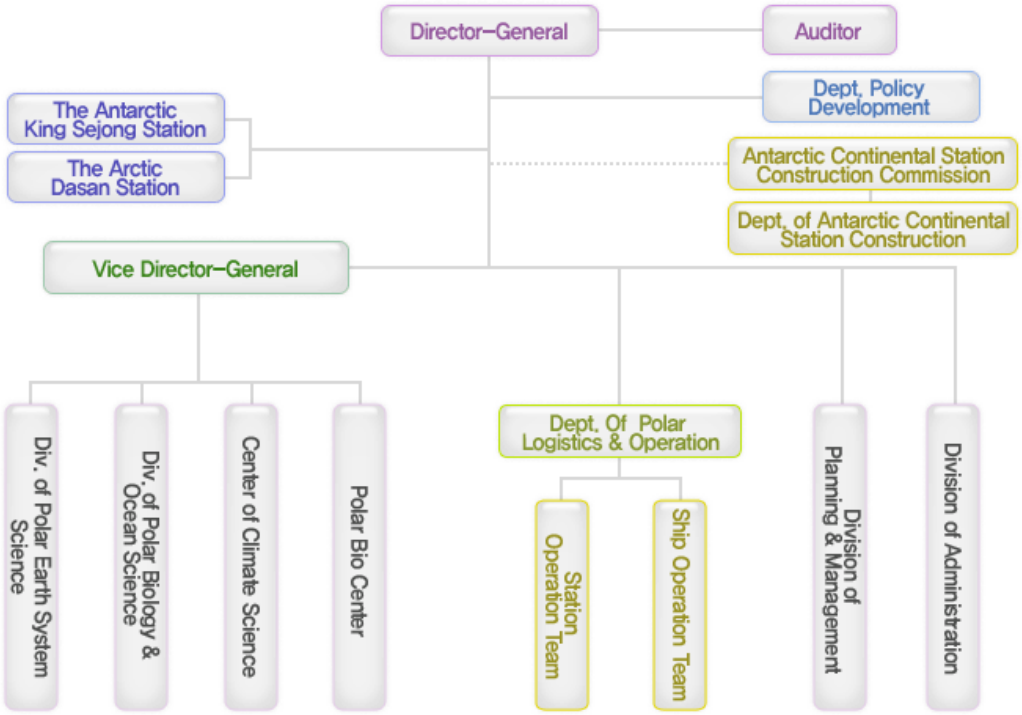

Figure 1: The organisation chart of KOPRI

Source: http://www.kopri.re.kr

The Ministry of Education, Science and Technology leads Korea's scientific research in the Polar Regions, along with the KOPRI. Unlike other departments making administrative effort for Korea to maintain its Antarctic presence and voice on Antarctic affairs, the Ministry of Education, Science and Technology has been concentrating its effort on producing research outcomes in a variety of scientific fields. It has been investigating the Antarctic environment and studying how to preserve the environment, especially in the 1980s and 1990s according to its annual plan.[38] In the 1990s, the department showed its great interest in developing resources technology in Antarctica through its annual summer and winter research activities in Antarctica.[39]

Since the late 1990s, the Ministry of Education, Science and Technology has been pursuing its middle and long-term plan in Antarctic activities, focussing on devising strategies in

[38]See for example, Ministry of Education, Science and Technology, *The First, Second and Third Year Investigation Reports* on the environment around the King Sejong station in 1988, 1989, and 1990, *The First, Second and Third Year Research Reports* on the property and preservation of Antarctic environment in 1994, 1995, and 1996.

[39] See for example, Ministry of Education, Science and Technology, *The First to Eighth Reports* on summer and winter activities of the Antarctic science research group in 1988 to 1995.

preparation for the scheduled review of the Protocol on Environmental Protection to the Antarctic Treaty. It has switched its main focus from the Antarctic environment and resources-oriented research to strategic solutions to climate change and global environmental pollution, and the development of Korea's basic and applied science through Antarctic research. For example, it conducted research on energy source technology related to climate change treaties in 1998[40] and other research on the genetic changes of Antarctic organisms by global environmental change in 2001.[41] In addition, it has been working on the development of remote sensing technology and space exploration in Antarctica.[42] On the other hand, it has maintained its main focus on the environment and mineral resources in the Arctic research.[43]

The Ministry of Environment is responsible for establishing domestic law related to Antarctic activities and environmental protection in the region.[44] Its second role is to manage all the activities in Antarctica by the other departments and institutes in accordance with international and domestic environmental laws.[45] In other words, any Antarctic activity should be reported to, and permitted by, the Ministry of Environment prior to its execution. The department also evaluates the operation and maintenance of the King Sejong Station, and organises a governmental inspection group to investigate the environmental changes and the creatures in Antarctica.[46] In particular, it conveys the government's opinions and suggestions on Antarctic issues in the Antarctic Treaty Consultative Meeting (ATCM) and other international workshops with the objective of actively participating in the Antarctic environmental protection campaign and improving Korea's international status as an exemplary nation of environmental policy. It conducted a series of preparations for having Korea's own Antarctic Specially Protected Area (ASPA) designated, and submitted its

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[40] See, Ministry of Education, Science and Technology, *A project on energy source technology related to climate change treaty*, Seoul, 1998.
[41] See, Ministry of Education, Science and Technology, *A Study on the genetic changes of Antarctic Creatures by Environmental Change and Pollution*, Seoul, 2001.
[42] See for example, Ministry of Education, Science and Technology, *Application of OSMI Data for Fisheries Oceanography and Calibration & Validation* and *The Final Report on the Enterprise of Remote Exploration Technology Development*, Seoul, 2002.
[43] See, Ministry of Education, Science and Technology *The First and Second Phase Reports on Arctic Air Environment and Mineral Resources*, Seoul, 2003 and 2004.
[44] See, Ministry of Environment, *The Current Situation of Environment-related Laws and International Treaties*, Seoul, 2008.
[45] The Office of Global Environment in the Ministry of Environment is responsible for making Antarctic management plans and issuing official documents to relevant departments and institutes.
[46] See for example, Office of Global Environment, Ministry of Environment, *The Early Environmental Assessment on the Renovation of the King Sejong Station in Antarctica*, Seoul, October 10, 2007.

proposal in the 31st ATCM.[47] With the proposal approved in the 32nd ATCM, Korea has been able to exercise its own right of management over the ASPA near the King Sejong Station, called "Penguin Village".[48]

The Office of Global Environment within the Ministry of Environment promotes the Antarctic environmental protection campaign to the public. It publishes information leaflets on the Antarctic eco-systems and environmental issues.[49] It also provides environmental movement organisations with advice on the Antarctic krill and whale protection, and reviews and reflects their suggestions in its environment and health policy.[50]

The Ministry of Foreign Affairs and Trade makes diplomatic efforts to represent the Republic of Korea in the Antarctic system by regularly participating in the Antarctic Treaty Consultative Meeting (ATCM) and the Informal Meeting for the Establishment of the Antarctic Treaty Secretariat. It collects information on the trend of the Antarctic activities by those nations involved in the Antarctic Treaty System and analyses Antarctic sovereignty issues and the strategic polar resources conflicts between and among the world powers.[51] Along with external changes and trends, the Ministry of Foreign Affairs and Trade makes internal preparations to negotiate ROK's Antarctic presence and voice on Antarctic affairs.[52]

The Ministry of Foreign Affairs and Trade establishes domestic laws of Antarctic activity and environmental protection aimed at implementing the Protocol on Environmental Protection to the Antarctic Treaty.[53] The minister announced that the purpose of establishing the law is to take an active participation in the system of Antarctic environmental protection, to

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[47] See for example, Office of Global Environment, Ministry of Environment *The Plan on the Participation in the International Workshop for the Appointment of Antarctic Specially Managed Area (ASMA)*, Seoul, April 17, 2008.

[48] The Office of Global Environment held a conference to discuss follow-up measures after the appointment of 'Penguin Village', inviting relevant departments and experts. See, Office of global Environment, Ministry of Environment, *The Announcement of Conference*, Seoul, April 23, 2009.

[49] See for example, Office of Global Environment, Ministry of Environment, *Promotional Materials for Antarctic Environmental Preservation*, Seoul, April 17, 2008.

[50] See for example, Office of Global Environment, Ministry of Environment, *The Results of the Interview with the Representatives of the Korea Federation for Environmental movements and the Antarctic and Southern Ocean Coalition*, Seoul, October 9, 2007.

[51] See for example, Ministry of Foreign Affairs and Trade, *The Issue of Antarctic Sovereignty*, Seoul, October 22, 2007.

[52] Kim Chan-woo, Officer of Environment and Science, Ministry of Foreign Affairs and Trade, "내일을 위한 환경외교펼칩니다,"("The Environmental Diplomacy for Tomorrow,"), *Hwankung Daily*, July 6, 2007.

[53] See, Ministry of Foreign Affairs and Trade, *Announcement No. 2003-11*, Seoul, April 26, 2003.

demonstrate South Korea's strong will to preserve the Antarctic environment, and to prevent any negative impact of South Korea's increasing Antarctic activity on the environment of Antarctica.[54]

The Ministry of Foreign Affairs and Trade continues to participate in the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) with the objective of enhancing Korean fishing companies' rights and interests as well as joining the international effort to protect Antarctic marine living resources.[55] It also takes on the projects needed to build a firm foundation on which Seoul can promote its bi-lateral strategic cooperation with other nations in polar scientific research and resources development.[56]

The Korea Supporters Association for Polar Research (KOSAP) was founded as a private organisation in 2005 in order to provide nationwide support for Korea's polar activity to be more prosperous.[57] The KOSAP plays a bridge role between the KOPRI and the people in Korea by supporting the activity of the KOPRI and promoting the achievements of the KOPRI to the public.[58] It operates its own homepage and publishes a public relations magazine to provide information on the Polar Regions to all circles. It also supports schools and other educational institutions to develop teaching materials on the Polar Regions.[59] The most recent promotional work of the KOSAP was to jointly hold an event, titled "Experience Antarctica" with Seoul City, in which the KOSAP arranged for visitors to do video chatting on-line with the researchers at the King Sejong Station.

Funded by its members and sponsoring businesses,[60] the KOSAP supports not only the KOPRI but many other polar research institutes and researchers as well. It operates a scholarship to train polar research professionals and provides aid for research institutes to launch polar projects.[61] In addition to its promotional work and funding of Antarctic research, the KOSAP collects letters of encouragement from the public and delivers them to the

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54 Ibid.
55 Ministry of Foreign Affairs and Trade, *The General Outlook of Antarctica*, Seoul, 23, 2008.
56 See for example, Ministry of Foreign Affairs and Trade, *Diplomacy Journal for January 2009*, Seoul, 2009.
57 http://kosap.or.kr.
58 Ministry of Land, Transport and Maritime Affairs, *A Private Organisation Supports the Polar Research*, Seoul, 2006.
59 http://kosap.or.kr/business5.html.
60 Phone Interview with Shin Sunglan, Secretary of KOSAP, March 26, 2010.
61 Ibid.

researchers at the Dasan Arctic Station and King Sejong Station in Antarctica in order to boost their morale.

The Asian Forum for Polar Sciences (AFOPS) was jointly founded by South Korea, China and Japan in 2004, and the president of the KOPRI was elected to be the chairman for the first two years.[62] With Malaysia and India joining the AFOPS in 2005, the current number of member nations is five. Its main objectives are to provide a foundation for cooperative research activities, to present Asian achievements toward international polar communities, and to encourage non-polar Asian countries' involvements in polar research.[63] The AFOPS has 5 Working Groups (WGs): Earth Science (ES), Life Science (LS), Planetary Science (PS), Engineering & Logistics (E&L), and Public Relations & Data Management (P&D), and each working group consists of representatives from member countries.[64]

Preparing a countermeasure for the regional grouping phenomenon of Europe and Central and South America, South Korea took the lead in organising the AFOPS with an objective of establishing a mutual-assistance system of Northeast Asia and taking the initiative in Polar affairs.[65] In order to ensure its continual activities in the Polar Regions and secure its vested rights through the regional group cooperation system, the ROK has been seeking common views on polar affairs among member countries and supporting cooperative programs on polar research such as joint science projects and a personnel exchange program. South Korea has also been convening joint symposia and workshops for polar sciences and producing joint publications, such as a journal called 'Advances in Polar Science (APS)'.[66]

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[62] AFOPS, "AFOPS Short History for COMNAP-EXCOM,", 2004, http://afops.org/documents.html.
[63] http://afops.org/terms%20of%20reference.html.
[64] Ibid.
[65] Ministry of Land, Transport and Maritime Affairs, http://blog.naver.com/mltm_ocean?Redirect=Log&logNo=60095328924.
[66] http://afops.org/terms%20of%20reference.html.

3.0 The Role of Antarctica in South Korean Science

Antarctica is the only place on the earth where a nation can guarantee its national benefit through scientific research…Continual increase in scientific research in the only undeveloped and unpolluted Polar Regions will be the only way to secure our national interests in global competition.[67]

In the mid 1980s considering Antarctica as 'a common heritage of mankind', the Malaysian government was going to submit to the UN General Assembly a bill to have Antarctica managed by the United Nations. The bill of the Malaysian government, however, was blocked by the union of those nations who had long claimed their sovereignty over Antarctica. In addition, they allowed India, China and Brazil who were leading the Third World to join the Antarctic Treaty and obtain the status of consultant party so that they could prevent the Malaysian government's claim or other similar opinions from being heard in the international community.[68] It has become a norm that only those nations who are conducting scientific research in Antarctica are entitled to manage the region.

However, the Antarctic continent is equally important from a purely scientific perspective for several reasons. First, the Polar Regions are the most appropriate places to predict global environmental and climate change by observing the glaciers and changes of the deep sea water cycle.[69] Second, various forms of energy flowing from the universe to Earth's atmosphere can be observed from the polar atmospheres due to their geographical position, and the Polar Regions are optimum places where the research on the reduction of ozone and increase of ultraviolet rays is conducted.[70] Third, the sediment in the Antarctic Ocean keeps the record of past global environmental changes intact: global warming, reduction of sea ice, and changes of the ocean eco-system.[71] Therefore, the increase of sea level and future global warming can be predicted by examining the record kept in the sediment. Similarly, the past

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[67] Lee Honggum, President of KOPRI, "Greetings," http://www.kopri.re.kr/index.jsp.
[68] Jang, Soon-gun, Captain of the 8th Winter Research, "The Antarctic Continent and Korea's Antarctic Research," *Gwahak Sasang*, No.34, 2000, pp.185-189.
[69] Jang, Soon-gun, Captain of the 8th Winter Research, *The Dream of Antarctic Exploration*, (Seoul: Science Books, 2004), p.132.
[70] http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_earth/antarcticnearth_earth_role/antarcticnearth_earth_role.cms.
[71] Jang, Soon-gun, Captain of the 8th Winter Research, *The Dream of Antarctic Exploration*, (Seoul: Science Books, 2004), p.310.

climate changes and the origin of the universe can be revealed by studying the Antarctic glaciers and meteors. Fourth, the unique biological evolution process can be investigated in the structure and function of the polar eco-systems.[72] Fifth, Polar Regions are repositories of future resources.[73] Therefore, research and development on new energy and food resources can be carried out in these regions.

3.1 The Main Research Fields of South Korea

South Korea has been developing the restoration technology of the polar paleoclimate and paleoocean, feeling it necessary to examine the record of the past climate changes in order to forecast the trend of climate change.[74] The first objective of the research is to restore the paleoclimate and paleoocean record of the Polar Regions by using the sediment of polar ocean and land, and explain the major factors that caused paleoclimate changes. The second objective is to understand the correlations between global climate change and regional climate change by comparing the paleoclimate change of the mid-latitudes, including the Korean peninsula, with that of the Polar Regions.[75] From this research, Seoul expects to be able to find out the causes of the recent climate change by understanding the trend and cause of natural climate change. It also hopes to be able to predict the natural environment change caused by regional warming and its impact by restoring the past warming environments of the Polar Regions.[76] This research is expected to boost the development of climate proxies.[77]

The ROK has shown its interests in verifying geological evolution and tectonics of the South Shetland Arc-Trench system in the Northern Antarctic Peninsula Region since late Paleozoic.[78] Regarding the Antarctic continent and its neighbouring waters as ‘a storeroom’ of the history of earth,[79] South Korea has been studying the tectonic evolution processes and the structure of the oceanic plate beneath West Antarctica. It expects to accumulate polar

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[72] KOPRI, *Midterm Strategic Plan (2009-2014)*, *KOPRI*, January 26, 2010.
[73] Saemaul , “The Repository of Future Resources; Antarctic Development,” *Saemaul* No.155, March 1987, pp.60-61.
[74] Kim Jung-chan. “Korea’s Research on Paleoclimate and Paleoocean: the General Outlook and Future Research Direcetion,”, Jijilhakhoiji Vol. 44. No.1, February 2008, pp.1-4.
[75] http://www.kopri.re.kr/index.jsp.
[76] Yun Ho-il, *Paleoceanography and Paleoclimate Study in the Antarctic for the Preparation of Global Climate Change Agreement in the 21st Century*, (Ahnsan: KORDI, 2002), p.170, 222.
[77] Jung Dae-kyo., “The Domestic and Overseas Paleoclimate Studies through Deposits from Lakes or Swamps,” 2008. Jijilhakhoiji Vol. 44. No.1, February 2008, pp.81-92.
[78] Choi Moon-yung., *Geological Evolution and Processes of Antarctica*, (Ahnsan: KORDI, 2001), pp.26-30.
[79] http://www.kopri.re.kr/index.jsp.

exploration technology through the field survey, which will prepare the ROK for resources exploration in the future.[80] It also hopes to develop the most advanced analysis technology through the installation and operation of a sample analysis system.[81] The most practical objective of this research is to collect basic information and accumulate the core technology for the construction of the second permanent base in the Antarctic continent.[82]

Polar Regions adjust global climate by ceaselessly exchanging substances and energies with other regions.[83] With this notion, South Korea has been researching polar atmospheres and climate changes. It aims at investigating the roles of the Polar Regions in global climate change and the trend of change of the elements of the polar climate system in order to forecast future climate changes.[84] South Korea believes that the understanding of the roles of the Polar Regions in the climate system will provide accurate forecasts and countermeasures to natural disasters.[85]

Seoul has been investigating the characteristics of the main organisms in the Polar Regions and their adapting mechanism in the extreme temperature.[86] It has also been observing the distribution and the numbers of the indicator organisms so that it can develop barometers to monitor and predict the changes of the eco-system.[87] By studying the characteristics of Polar creatures and eco-systems, which has been the core subject of the International Polar Year (IPY) and recommended for research by the Intergovernmental Panel on Climate Change (IPCC),[88] South Korea expects to enhance its political and diplomatic position in international agreements including the Antarctic Treaty, as well as investigate the origin of life through the research on polar creatures and understand the changes of the eco-systems caused by global environmental change.

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[80] Choi Moon-yung., *Geological Evolution and Processes of Antarctica*, (Ahnsan: KORDI, 2001), pp.206-215.
[81] Lee Sang-hoon., *The Studies on Natural Environment and Conservation of Polar Region*, (Ahnsan: KORDI, 2000), pp.383-396.
[82] http://www.kopri.re.kr/index.jsp.
[83] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, 2010-08-04.
[84] http://www.kopri.re.kr/index.jsp.
[85] Yun Ho-il, *Paleoceanography and Paleoclimate Study in the Antarctic for the Preparation of Global Climate Change Agreement in the 21st Century*, (Ahnsan: KORDI, 2002), 2002. p.11.
[86] http://www.kopri.re.kr/index.jsp.
[87] Kim Ye-dong., *Annual Report of Environmental Monitoring on Human Impacts at the King Sejong Station*, (Ahnsan: KORDI, 1998). pp.129-140.
[88] http://www.kopri.re.kr/index.jsp.

South Korea has been establishing a polar observation network with objectives of developing the world's first polar ocean observation and hydro-acoustic observation equipment.[89] It plans to use the established infrastructure to do research on the hydrothermal system of the sea bottom and other unexplored fields.[90] Seoul is expecting to seize the leadership in international cooperation and joint research by establishing a successive and high quality data-collecting system, overcoming the extremely low temperature, as well as investigating the changes in the ocean and thawing environment.[91] This enterprise is also expected to make a significant contribution to collecting the samples of polar organisms in the deep sea hydrothermal eco-system and securing minerals by using South Korea's first remotely operated vehicle (ROV) based on the data from hydro-acoustic observation equipment.[92]

South Korea is ranked the first in emission increase rates of greenhouse gasses among OECD members.[93] It has, therefore, been eager to find scientific ways of reducing and isolating carbon dioxide, expecting a much stricter global standard on greenhouse gas emission will be set in the near future. Based on the fact that the Antarctic Ocean absorbs most of the greenhouse gasses produced by humans, the ROK has been assessing the greenhouse gas disposal capacity of the Antarctic Ocean.[94] This research has been conducted with objectives of investigating the physical and biological greenhouse gas disposal process in the Antarctic Ocean, and the likelihood of using the Antarctic Ocean as a place to remove further greenhouse gasses.[95]

With the notion that polar creatures show their own unique life phenomena that are never seen in any other parts of the world, South Korea has been trying to secure a variety of polar creatures and plant genetic resources, and to develop future biomaterials such as low

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[89] See for example, Park Byung-kwon, *The Research on Natural Environments and resources of Antarctica*, (Ahnsan: KORDI, 1992).
[90] http://www.kopri.re.kr/index.jsp.
[91] See for example, Kang Yungchul, *Development of Korean Antarctic Research Information System*, (Ahnsan: KORDI, 2001).
[92] See, Ministry of Maritime Affairs & Fisheries, *The Second Station on the Antarctic Continent*, Seoul,2007, and Ministry of Maritime Affairs & Fisheries *Development of an Advanced Deep-sea Unmanned Underwater Vehicle*, Seoul, 2007, pp.8-13.
[93] Kim Chan-woo, *The 21st Environmental Diplomacy*, (Seoul: Sangsang Communication, 2006), p.96.
[94] Kang Yung-chul, *Oceanographic Studies on Antarctic Marine Living Resources and Ecosystems*, (Ahnsan: KORDI, 2002), pp.10-11.
[95] http://www.kopri.re.kr/index.jsp.

temperature enzymes, materials of functional cosmetics and metabolism activators.[96] The ROK expects to understand the unique life phenomena of the polar creatures, secure the core technology to continuously utilise polar plant genetic resources and introduce polar biomaterials into domestic and overseas markets.[97]

The ROK has been doing research to recreate polar organisms and establish the base of utilising the creatures.[98] The specific objectives of this research are to secure and culture low temperature polar microalgae, marine algae, microorganisms, marine creatures, land creatures and freshwater creatures; to select highly cultivable polar creatures and establish a mass cultivation system; to establish a polar creature bank and theme park; and to support the applied research for commercialising polar creatures.[99] It expects the research to provide a variety of the samples of polar creatures, vitalise technological development of the related industries and industrialise a higher value-added business of polar creatures.[100] It also plans to use the polar creature theme park for the purpose of education and promotion of South Korea's polar science.[101]

Appreciating the limitless scientific value of polar glaciers, South Korea has been organising an IPY (International Polar Year) Glacier Programme to cross the Antarctic continent and developing glacier foundation technology.[102] The objectives of the research are to train professionals in glacier environment exploration and develop domestic glacier research infrastructure;[103] to develop the analysis technology of environmental tracer or climate proxy to restore the global climate system;[104] and to explore, drill and study glaciers independently after the construction of the second permanent base in the Antarctic continent.[105] From this

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[96] Lee Yun-ho, *Research on the Development of Antarctic Marine Living Resources*, (Ahnsan: KORDI, 2000), pp.87-92, pp.307-342.
[97] http://www.kopri.re.kr/index.jsp.
[98] Goryungjinongupyungooso, *2008 Experimental Research*, (Pyungchang: Rural Development Administration, 2008), pp.232-235.
[99] Phone Interview with Lee Yukyung, Head of Division of Polar Bio Sciences, KOPRI, April 4, 2010.
[100] Department of Ocean Deveolpment No.3148-6535, Ministry of Land, Transport and Maritime Affairs, *Extraction of New Substances from Polar Organisms and High Value Products*, Seoul, 2002.
[101] http://www.kopri.re.kr/index.jsp.
[102] Hong Sung-min, "Glacier Exploration on the Antarctic Continent," Gwahakgwa Gisool No. 452. 2006. pp.50-53.
[103] Phone Interview with Jin Yunggun, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.
[104] Lee Ju-han, "GPR investigation of glacier on Livingstone Island, Antarctica,"*2005 Thesis Collection, of the Korean Society of Earth and Exploration Geophysicists*, 2005, pp.151-154.
[105] http://www.kopri.re.kr/index.jsp.

research, the ROK expects to develop the manufacturing technology of glacier drilling machines, improve its glacier research to an international level, enhance its international status through development of an international glacier research programme, and provide the most recent scientific information on paleoclimate and paleoenvironment essential in predicting the future global climate change.[106]

3.2 The Achievements of South Korea's Polar Research Activities

Based upon the Basic Plan of the Antarctic Research Activity Promotion (Namgukyunguhwaldongjinhungkibonkyehoik), the ROK has been pursuing its research goal of understanding the roles of the Polar Regions in global environmental change and predicting the future environment by investigating the polar climate systems (the land, atmosphere, glaciers, water and living creatures) and restoring the environmental changes in chronological order.[107] Another goal of South Korea's Polar activity has been to establish an advanced infrastructure to conduct polar research more successfully and effectively.[108]

The major accomplishments of South Korea's Polar research are classified into four fields;[109] securing the continent-based core fundamental technology, studying polar environmental change, securing practically usable polar application technology, and establishing an advanced polar research infrastructure.

(1) The Continent-Based Core Fundamental Technology-Glacier Core Drilling and Meteor Exploration

South Korea has sent its ice core drilling technicians to participate in an IPY project, North Greenland Eemian Ice Drilling (NEEM) to improve its technical and research skills in polar glacier drilling and to continue securing glacier samples through the committee of NEEM.[110] By participating in a multinational joint programme of IPY to solve one of the difficult

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[106] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[107] Department of Basic Research, Ministry of Education, Science and Technology, *Enhance the Antarctic Research*, Seoul, 2006.
[108] Department of Science and Technology Policy, Ministry of Education, Science and Technology, *Commercialising Industry for Large-scale Wig Ship*, Seoul, 2005, pp.1-3.
[109] http://www.kopri.re.kr/index.jsp.
[110] Ibid.

questions in paleoclimate science, the ROK has upgraded its status in glacier research.[111] In addition, through NEEM, South Korea has acquired advanced ice drilling and analysis technology in preparation for glacier research which will be in earnest after the construction of its continental base.[112]

South Korea succeeded in independently manufacturing a glacier core drill in 2008.[113] In the same year, it organised an alpine glacier exploration and bore in Mongolia, inviting National University of Mongolia and China's Lanzhou Glacier Institute to participate.[114] Through this experience South Korea acquired comprehensive techniques of ice boring and gained the data needed in studying the Asian paleoclimate and paleoenvironment. It is now developing an ice core drill that will bore up to 500 m based on its first manufacturing experience.[115]

The ROK has introduced and operated cutting-edge micro-mineral element analysis equipment such as a High Resolution Mass Spectrometer (HR-ICP-MS) and Thermal Ionization Mass Spectrometer (TIMS).[116] The scientific and technological implications of the introduction and operation of such state-of-the-art trace element analysis equipment are that South Korea has secured an international level of infrastructure and technology for micro-concentration analysis, and has been able to carry out proxy analysis on micro-mineral elements indicating climate change from polar ice core samples.[117] The ROK expects to produce international level research results on trace mineral elements through its competitive proxy production technology and, ultimately, to lead joint international research.[118]

South Korea has developed its own Antarctic meteor collection programme and organised the Meteor Classification/Distribution/Research Committee that consists of the members from

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111 Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
112 http://www.kopri.re.kr/index.jsp.
113 Ibid.
114 http://www.kopri.re.kr/www/research/outcome_2008/outcome_2008_1st/outcome_2008_1st.cms.
115 http://blog.kopri.re.kr/www/research/prior_overview/prior_09/prior_09.cms.
116 See for example, Kim Yung-sang, *Studies on the Development of Separative Concentration Techniques and Atomic Spectroscopic Methods for the Determination of Ultra-trace Elements*, (Seoul: Korea University, 2002), pp.37-48. and Choi Jae-won, "Applications of High Resolution Mass Spectrometer for the Multi-residual Measurement 1. organophosphorous Pesticides Group-2,"*The Korean Society for Environmental Analysis* Vol.11, No.1, 2008, pp.55-65.
117 Phone Interview with Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August 17, 2010.
118 http://www.kopri.re.kr/www/research/outcome_2008/outcome_2008_1st/outcome_2008_1st.cms.

KOPRI, Seoul National University and the University of California at Los Angeles.[119] It has registered its five Antarctic meteors in international organisations (TIL06001-TIL06005).[120] With the establishment of an infrastructure to manage and study meteors, it has entered a stage of doing research on the formation of the solar system and universe in preparation for the coming era of the colonial development of planets.[121] It has also become the world's fifth nation in Antarctic meteor research.[122]

The ROK has been strengthening its research competitiveness and narrowing the gap between its level of science and technology and those of advanced nations by operating a semi-permanent clean meteor muniment room.[123] South Korea has been able to develop its meteor-related research areas and accumulate the basic data for future research on the universe through the meteor muniment room. It expects its study on the universe and meteors to arouse national pride of the people.[124]

(2) Research on Polar Environmental Change-Polar Paleoenvironment, Polar Atmosphere and Ocean, and Polar Eco-system

South Korea has investigated the sedimentation system of Drake Passage that changes by glacier cycle. It has discovered that the mud originated in land had been deposited during glacial epoch, whereas the main sediment was hemi-pelagic mud comprised largely of biogenic-sedimentary particles during an interglacial period.[125] It has also investigated the process of the sediment drift by glacier cycle in the Bellingshausen Sea.[126] By discovering the sedimentary environments of Drake Passage and the South Antarctic continent, the ROK has prepared the ground for an interpretation of the geological, oceanographic and biological

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119 Ibid.
120 See, Han Jang-mi, "The Changing Temperature of the O-Chondrites Collected in Korea's First and Second Antarctic Meteor Expeditions," *The Journal of the Geological Society of Korea* Vol.45, No.2, 2009, pp.157-171.
121 See, Kim Kyung-ja, "Development of new technique to trace active landscape change using multiple cosmogonic nuclides," *The Journal of Korea Institute of Geoscience and Mineral Resources*, 2008, pp.15-36.
122 "국내 학계 남극운석 첫 탐사연구," ("The first exploration of Antarctic meteor by the domestic academic circle,") *Yunhap News*, October 29, 2009.
123 Choi Byun-gak, *Development of classification system for Antarctic meteorites*, (Seoul: Seoul National University, 2009), pp.15-16.
124 Phone Interview with Jin Yunggun, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.
125 Yun Ho-il, *Paleoceanography and Paleoclimate Study in the Antarctic for the Preparation of Global Climate Change Agreement in the 21st Century*, (Ahnsan: KORDI, 2002), pp.124-129.
126 Yu Kyu-chul, "The Sediment Drift by Glacier Cycle in the Bellingshausen Sea," *The Journal of Korea Institute of Geoscience and Mineral Resources* Vol.44, No.1, 2008, pp.15-31.

environmental change by glacier cycle in South Antarctica, and for study on the change of the Antarctic circumpolar current, which plays a crucial role in global environmental change.[127]

South Korea has succeeded in graphically restoring the climate changes of the continental shelf of the South Orkney Islands for the past 8,800 years through sedimentological, mineralogical and paleontological analysis.[128] Despite its important location where the Scotia Sea and the Weddell Sea meet, there have been very little research on the Paleoclimate change of the South Orkney Islands. The ROK has found that unlike other regions of the Antarctic Peninsula which show dramatic local climate changes, there had not been any significant differences between the regional climate changes of the South Orkney Islands and global climate changes during the Holocene.[129] South Korea has been able to restore the past changes of coastal sea areas by discovering the proxies that can recognise the influences of the seawater of the Scotia and the Weddell seas.[130]

The ROK has investigated the retreat time of the land glaciers in the Antarctic Peninsula by introducing new proxies.[131] South Korea was the first to apply the age determination by Optically Stimulated Luminescence (OSL) to measure polar patterned ground.[132] It also investigated the retreat time of the land glacier on King George Island by using radioactive decay of cosmogonic 36Cl.[133] South Korea has taken the initiative in age determination by introducing new proxies to investigate the retreat time of the land glacier in the regions of the Antarctic Peninsula which shows the most sensitive reaction to global warming.[134]

In a similar way, South Korea has investigated the physical properties of the particles in the Arctic atmosphere by altitude and the Arctic meteorological phenomena.[135] It has analysed

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127 Yun Ho-il, *Paleoceanography and Paleoclimate Study in the Antarctic for the Preparation of Global Climate Change Agreement in the 21st Century*, (Ahnsan: KORDI, 2002), pp.3-11.
128 Park Yung-sook, "The Core Sediment on the South Orkney Islands," *The Journal of Korea Institute of Geoscience and Mineral Resources* Vol.43, No.1, 2007, pp.33-42.
129 Ibid.
130 Hong Jong-kook, "Tectonic features along the South Scotia Ridge, Antarctica," *2005 Thesis Collection, Korean Society of Earth and Exploration Geophysicists*, 2005, pp.139-144.
131 KOPRI, *Mid-term Strategic Plan (2009~2014),* (Incheon: KOPRI, 2009), p.47,68.
132 http://www.kopri.re.kr/index.jsp.
133 http://blog.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.
134 http://www.kopri.re.kr/index.jsp.
135 Ryu Ji-yun, "Single-particle Characterization of Summertime Arctic Aerosols Collected at Ny-Alesund, Svalbard ," *Proceeding of the 46th Meeting of the Korean Society for Atmospheric Environment, Seoul, 2008* (Seoul: KOSAE, 2008), pp.357-358.

the spatial distribution of the atmospheric particles observed from Corbel Observatory and Zeppelin Observatory in collaboration with the French Polar Institute and Stockholm University.[136] It has also investigated the physical properties of the Arctic aerosol by sequentially observing the clouds' condensation nucleus.[137] Collaborating with Stockholm University, the Norwegian Polar Institute and the French Polar Institute, Korea was the first to analyse the formations of the Arctic particles, and examine links between the particles and the Arctic meteorological phenomena.[138] It was also the first to successively observe the Arctic Cloud Condensation Nucleus (CCN), based on which it has been carrying out a sequential observation of the atmospheric particles of Antarctica and the influence of the particles on the Antarctic climate from the King Sejong base since 2009.[139]

In addition, The ROK has been doing research on chemical relations between the atmospheric substances of the Polar Regions and climate. It has been analysing the greenhouse gasses (CO2, CH4, N2O, SF6) in the regions of the Antarctic Peninsula and found out that the fundamental cause of the on-going climate changes is the increasing greenhouse gasses.[140] In addition to the atmospheric research, South Korea has been trying to understand the interactions between the atmosphere and other climate systems. By quantifying the role of carbon dioxide emitted from the land in exchange between the Arctic atmospheric carbon dioxide and the arctic land carbon dioxide, it has assessed the contribution of the land in the exchange of carbon dioxide between the atmosphere of the Arctic and the tundra eco-system, and investigated the scale of the global warming phenomenon and its quantitative changes.[141] By analysing the warm current of the Antarctic coast, it has been able to assess the exchange of energy between the Antarctic Ocean and the atmosphere.[142] South Korea, therefore, has obtained data on the roles of the Antarctic Ocean and the Arctic tundra eco-system crucial in global exchange of carbon dioxide.

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136 http://www.kopri.re.kr/index.jsp.
137 http://blog.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.
138 http://www.kopri.re.kr/index.jsp.
139 http://blog.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.
140 Phone Interview with Lee Bangyong, Principal Researcher of Division of Polar Climate Research, KOPRI, August 6, 2010.
141 http://blog.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.
142 Lee Jae-hak, *A study on the development of key elements for monitoring and prediction of the climate change*, (Seoul: Ministry of Maritime Affairs & Fisheries, 2006), pp.6-14.

South Korea has also analysed the mesosphere and studied the interactions between the thermosphere and the ionosphere. It has measured the temperatures of the mesosphere by using a Spectrometer Airglow Temperature Imager (SATI), calculated the physical status of the thermosphere, and found out the influence of the ionospheric electronic density change on the wind and temperature of the thermosphere.[143] In particular, it has figured out that during a geomagnetic storm the ionospheric electronic density has a significant influence on the wind and temperature of the thermosphere through ion drag and Joule heating.[144] The most remarkable scientific implication of the research outcomes is that South Korea has been able to explain the interrelationship between the tropospheric meteorological phenomena by global warming and the weather of the lower layer atmosphere as well as the quantitative exchange of energy between the troposphere and the lower layer atmosphere.[145]

South Korea has continued to operate its polar hydroacoustic observation system. Joined by the National Oceanic and Atmospheric Administration (NOAA), an affiliated organisation of the United States Department of Commerce, the KOPRI has achieved 100 per cent data collection rate through the launching of its hydroacoustic observation equipment in Antarctica.[146] This achievement implies that the ROK is able to conduct a long-term continual observation on the crustal activity and marine environment of polar seas by establishing a data collection system, overcoming the extreme environmental conditions of the Polar Regions.[147]

South Korea has also established a data processing system and observation data base. It has built rapid data processing systems for its polar hydroacoustic observation such as Linux Workstation, Linux PC 2 and Network Array System.[148] It has also developed a programme, called "ISHMAEL", designed to automatically monitor crustal activities of the seabed and iceberg vibration sound.[149] It has succeeded in locating minute crustal and iceberg activities in the Antarctic Peninsula and analysed interpolate microearthquakes observed in the Polar

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[143] Kwak Yung-shil, "Analysis of Forcing Terms Determining the Thermospheric Wind Vortices at High Latitudes," *The Journal of the Korean Space Science Society* Vol.25, No.4, 2008, pp. 415-424.
[144] Kim Yong-ha, *Observation of upper atmospheric phenomena and study on their wave nature in the Arctic and Antarctic regions*, (Choongnam: Choongnam University, 2009), pp.3-7.
[145] http://blog.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.
[146] Ibid.
[147] Ibid.
[148] http://www.kopri.re.kr/index.jsp.
[149] Ibid.

Regions through the distributed acoustic source localiser (PMCC) invented by the KOPRI.[150] The ROK has investigated the influence of a seismic source on a T wave through acoustic modelling, and found out that the more shallow the seismic source is, the more powerful peak the earthquake has.[151] As a result of the above-mentioned achievements, South Korea has improved its ability to detect minute submarine crustal activities and analyse seismic hazard.

The ROK has investigated the crustal activity and iceberg movement in the Antarctic Ocean, particularly in Bransfield Strait. It has found out that the submarine crustal activities in the Southwest Bransfield Strait are caused by magma interpenetration, whereas complex crustal activities by tectonic movement are occurring in the Northeast Bransfield Strait.[152] It has concluded that considering the Scotia Islands and the Antarctic Peninsula are moving toward Drake Passage by 10 mm every year, Bransfield Strait can be classified as a tectonic activity area of ultra-slow continental rifting.[153] The research on volcanic and hydrothermal activities through the observation of submarine crustal activity has provided basic data for investigating crustal movements and hydrothermal activities in the Antarctic Peninsula.[154]

In its research on the polar eco-system, South Korea has studied marine life indicator species in the Polar Regions and their survival strategies at permanently or extremely cold temperatures;[155] it has investigated the reproduction pattern of *Laternula ellipticas*, analysed the low temperature protein structure of the species and measured the reactions of living *Laternula ellipticas* to different growth temperatures.[156] Secondly, it has carried out ecological studies on the land organisms around the King Sejong station; it has measured the nest distribution and change of the *Catharacta lonnbergi* and C. *maccormicki*.[157] Thirdly, it has excavated the molecular biomarkers of major life indicator species; it has excavated a

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[150] http://www.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.
[151] Korea Meteorological Administration, A*nalysis of Seismic Source and Crustal Quality Factors*, (Seoul: Korea Meteorological Administration, 2009), pp. 25-30.
[152] Park Yung-sook, "High-resolution diatom investigation on core sediments in Bransfield Straight," *Journal of the Geological Society of Korea* Vol.45, No.1, 2009, pp.1-8.
[153] http://www.kopri.re.kr/index.jsp.
[154] Park Yung-sook, "High-resolution diatom investigation on core sediments in Bransfield Straight," *Journal of the Geological Society of Korea* Vol.45, No.1, 2009, pp.1-8.
[155] Phone Interview with Lee Yukyung, Head of Division of Polar Bio Sciences, KOPRI, August 4, 2010.
[156] Ahn In-yung, "Some Ecological and Physiological Features of the Antarctic Clam, Laternula elliptica (King and Broderip) in a Nearshore Habitat on King George Island," *KORDI, Ocean and Polar Research* Vol.23, No.4, 2001, pp.419-424.
[157] Kim Jung-hoon, "Nest Distribution of Skuas on Barton and Weaver Peninsulas of the King George Island, the Antarctic," *KORDI, Ocean and Polar Research* Vol.27, No.4, 2005, pp. 443-450.

number of molecular biomarkers from Laternula ellipticas and measured the responses of the excavated molecular biomarkers to external environmental factors through real-time polymerase chain reaction (PCR).[158]

(3) Practically Usable Polar Application Technology

South Korea has secured polar biotic resources and studied the diversity of the secured resources with objectives of developing the fundamental technology to obtain new genes and making the maximum use of polar biotic resources in the biotech industry.[159] It has secured a variety of polar microorganisms, seeds of useful plants and psychrophilic microalgae, and has developed useful new biomaterials by establishing a metagenome library to understand the genetic information of uncultivable microorganisms.[160] In order to overcome the limit to securing new resources due to the enhanced international protection rules for polar biotic resources, the ROK has also been keen to preoccupy and utilise cultivable polar living creatures as well.[161]

South Korea has analysed the DNA microarrays of polar organisms. It has classified the DNA microarrays of the *aulacomnium turgidum* which is an Arctic moss by functions through a gene ontology analysis.[162] It has also secured the information about 60,765 DNA microarrays of the deschampsia antarctica which is an Antarctic phanerogam in order to understand various physiological functions.[163] Finally, it has secured biocatalysts such as KOPRI 21698 endochitinase and KOPRI 22718 exochitinase so as to replace a chemical process with an environment-friendly NAG (N-acetylglucosamie) production process.[164] South Korea expects the accumulated information about the DNA microarrays of polar organisms will contribute to its gene exploration and research on genetic functions related to

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158 Kim Ye-dong, *Annual Report of Environmental Monitoring on Human Impacts at the King Sejong Station*, (Ahnsan: KORDI, 1998), pp.72-99.
159 Department of Ocean Deveolpment No.3148-6535, Ministry of Land, Transport and Maritime Affairs , *Extraction of New Substances from Polar Organisms and High Value Products*, Seoul, 2002.
160 See for example,Yu Sang-ryeol, *Development of basic technology for Microbial diversity and its application;Improving construction and screening of metagenome library*, (Seoul: Seoul National University, 2005).
161 http://www.kopri.re.kr/index.jsp.
162 Ibid.
163 Kim Ji-hee, "Distribution Pattern of Deschampsia antarctica, a Flowering Plant Newly Colonized around King Sejong Station in Antarctica," *KORDI, Ocean and Polar Research* Vol.26, No.1, 2004, pp.23-32.
164 http://www.kopri.re.kr/index.jsp.

the survival mechanism, useful enzymes and bioactive substances of polar organisms.[165] Through securing the data on the DNA microarrays of polar organisms, the ROK is now able to conduct a molecular level of polar organism research.[166]

The ROK has studied the evolutionary systems of polar organisms in order to understand the geographical distribution and evolutionary syntechnic of Antarctic lichens.[167] It has found that the lichens in the Pacific Antarctic coastal areas share genetic systems despite geographical isolation, the lichens inhabiting King George Island maintain independent genetic systems from the lichens in the Antarctic continent, and the distribution of Antarctic lichens is determined by their adaptability to the inhabiting environment rather than the limited mobility.[168] South Korea is now using the research outcomes to investigate the survival mechanism of polar lichens and their geographical migration according to climate change.[169]

South Korea has secured polar microalgae and succeeded in classifying them in terms of molecular phylogeny.[170] It has secured microalgae and oceanic microorganisms around the Dasan Base in the Arctic, and succeeded in separating new species of microorganisms from the embryoid of polar phytoplankton.[171] It has also secured low temperature-friendly microorganisms from polar microalgae and studied the diversity of the species of microorganisms by using techniques of molecular biology.[172] Those achievements have enabled South Korea to improve its qualitative as well as quantitative level of cultivating polar microalgae. In particular, the ROK has discovered new taxa, secured polar biotic resources and increased utilisability of the resources through a community comparison study of polar microorganisms by using techniques of molecular biology.[173]

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[165] Kang Sung-ho, "Cryobiological Perspectives on the Cold Adaptation of Polar Organisms," *KORDI, Ocean and Polar Research* Vol.29, No.3, 2007, pp.263-271.
[166] http://www.kopri.re.kr/index.jsp.
[167] See for example, Lee Joo-sam, "The distribution of vegetation of the lichens on the Barton Peninsula of King George Island ," *KORDI, Korea Polar Research* Vol.3, No.1, 1992, pp.27-34.
[168] http://www.kopri.re.kr/index.jsp.
[169] Ibid.
[170] See for example, Lee Ki-yung, *Phylogenetic and Taxonomic Analyses of Aerobic Bacteria Isolated from the Antarctic and Arctic Coastal Seawaters*, (Incheon: Inha University, 2008).
[171] http://www.kopri.re.kr/index.jsp.
[172] See for example, Ye Sung-soo, *Molecular/cellular and ecophysiological study of double-protectant bioactive materials derived from arctic organisms and their isospecies*, (Inje: Inje University, 2010).
[173] http://www.kopri.re.kr/index.jsp.

South Korea has explored and secured new polar biomaterials. It has secured dioxygenase which is a process enzyme activating in low temperature.[174] It has also developed a biocatalyst that is used in an NAG (N-acetylglucosamie) production process and new antioxidants from Antarctic mosses and lichens.[175] Likewise, it has extracted inhibitors to Protein-tyrosine phosphatase 1B (PTP1B) from Antarctic lichens.[176] The scientific implication of the achievements is that the ROK is able to extract low temperature enzymes for environment-friendly production processes and new materials for functional cosmetics and medicines, and establish the foundation of researching new polar biomaterials.[177] There are four ripple effects[178] South Korea expects from its research on polar organisms. First, it will put through technical improvements in biotechnology and process technology by securing polar biomaterials and developing its ability to utilise them. Second, it will provide basic research materials for its domestic enterprises, research institutes and universities, and create new bio-industries. The third effect is that it will enhance its national competitiveness and take action against technology opening pressure from advanced nations by establishing its technology to utilise polar organisms for industrial purposes and obtaining patents on the polar biotic resources it has discovered and developed. Lastly, it will gain unlimited economic benefits from polar organisms adapting to extreme environments as biogenetic resources to be used in the future bio-industries.

The ROK has established and been operating a database to efficiently manage the information accumulated about polar biotic resources and diversity.[179] After completing the core database, it has put into the database the information on samples and microorganism strains. It has also completed an information classification DB, technical name DB and reference DB that are interlocked with the core DB.[180] The DB programmes have enabled South Korea to investigate the evolution and adaption processes of polar organisms by conducting comparison research between and among data on the distribution of polar

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[174] http://www.kopri.re.kr/www/research/outcome_2008/outcome_2008_3rd/outcome_2008_3rd.cms.
[175] See for example, Ha Tae-yul, "Antioxidant Activity and Contents of Bioactive Components in Polar Microalgae," *KORDI, Ocean and Polar Research* Vol.28, No.1, 2006, pp.37-43.
[176] Korean Intellectual Property Office, http://link.kipris.or.kr/link/APP_link/APP_PATENT.jsp.
[177] See for example, Lee Jung-hyun, "Characterization of a Psychrophilic Metagenome Esterase EM2L8 and Production of a Chiral Intermediate for Hyperlipemia Drug," *Korean Journal of Microbiology and Biotechnology* Vol.37, No.2, 2009, pp.118-124.
[178] http://www.kopri.re.kr/index.jsp.
[179] See, Kang Yung-chul, *Development of Korean Antarctic Research Information System*, (Ahnsan: KORDI, 2001).
[180] http://www.kopri.re.kr/index.jsp.

organisms, ecological environment, physiological activity and evolutionary phylogeny.[181] The information managed by the databases have been released or sold to domestic and overseas researchers.[182]

South Korea has had three major achievements in its research on polar submarine geological features. The first achievement is it has obtained high resolution data on elastic waves.[183] Understanding that Antarctica holds 55 billion barrels of petroleum and 221 trillion m3 of natural gas, South Korea has prepared itself for the future submarine resource development in Antarctica through acquiring the high resolution data on Antarctic submarine strata.[184] The high resolution data has enabled the ROK to select potential areas blessed with submarine resources. For instance, the ROK has discovered a gas hydrate sedimentary layer in the North-eastern part of the Antarctic Ocean, which helped in drawing up a resource map.[185] Secondly, South Korea has collected surface deposits from the North-eastern part of the Continent through gravitational drilling core.[186] It has analysed the organic compounds of the surface deposits and accessed the probabilities of submarine resources. The third accomplishment is the establishment of a database for polar submarine geological features and completion of a resource map.[187] The ROK expects from the systemic data accumulation that it will be able to draw up a broader submarine resource map of Antarctica and choose areas to enter that are in the best strategic interests of Korea in preparation for the point of time when Antarctica and its submarine resources might start to develop.[188]

(4) Advanced Polar Research Infrastructure

The King Sejong Station consists largely of eight buildings: Dining Room/Clinic, Research Laboratory Building, Dormitory, Machine Operating Building, Powerhouse,

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[181] KOPRI, *Mid-term Strategic Plan (2009~2014)*, (Incheon: KOPRI, 2009), p.55.
[182] http://www.kopri.re.kr/researchdep/biocenter/biocenter_info/biocenter_info.cms.
[183] Jin Yung-kun, "Interpretation of Gravity, Magnetic and High-resolution (3.5 kHz) Seismic Data in the Powell Basin, Antarctica," *Korean Society of Earth and Exploration Geophysicists, Jigu Mooli* Vol.7, No.1, 2004, pp.1-10.
[184] Phone Interview with Jin Yunggun, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.
[185] Hong Jong-kook, "Distribution of gas hydrates off northern Antarctic Peninsula," *2007 Spring Meeting of the Korean Society for New and Renewable Energy, Seoul, 2007* (Seoul: KSNRE, 2007), pp.524-527.
[186] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[187] http://www.kopri.re.kr/index.jsp.
[188] Hong Jong-kook, "Distribution of gas hydrates off northern Antarctic Peninsula," *2007 Spring Meeting of the Korean Society for New and Renewable Energy, Seoul, 2007* (Seoul: KSNRE, 2007), pp.524-527.

Repair Shop, Gymnasium/Warehouse, and Heavy Equipments House. The Research Laboratory Building is divided into seven sections: Marine Biology Laboratory for biological and chemical analyses and experiments of Antarctic samples; Geology/Geophysics Laboratory for research on Antarctic tectonics, terrestrial and marine geology, measurement, and automatic recording earthquake and geomagnetism; Atmospheric Sciences Laboratory for meteorological observation; Radio Operating Room for an intelligence network at the station; Dark Room for developing colour slides and black/white films, and black/white printing; Geomagnetism Operational Bioinstrumentation System; and Upper Atmosphere Operational Bioinstrumentation System.[189]

Its main facilities are a generator, incinerator, sewage treatment system, desalination unit, freezer/refrigerator, hot-water boiler, can compressor and leftover food processor. Its communications equipment includes; a dish antenna for data transmission with artificial satellites; dome type antenna for data transmission with maritime satellites; high frequency antenna; electronic telephone exchanger; antenna for high frequency and very high frequency; two-way radios; CCTV; main system computer (comprised of a router, multiplexor, modem, hub, uninterruptible power supply, telex, fax, printer and power supply); very high frequency radio; power amp; and global positioning system. For transportation purposes, the station is equipped with an excavator, forklift, crane, two snow cars, snow mobile, rubber boat for 15 people, rubber boat for 21 people, one ton truck, and porter.[190]

The Dasan Station is part of an international research community including stations owned by Norway, France, Germany, Italy, Japan, Korea and the UK. The building of the station is divided into five laboratories, a preparatory room for diving, the captain's room, an office, lounge, dining room, shower room, and six bedrooms for 12 people. The station is equipped with a clean bench for clean experiments such as an experiment with microorganisms, cold incubator for cultivating microalgae, drying oven for drying metafemales and samples, autoclave for sterilising metafemales, deep freezer and refrigerator-freezer.[191]

[189]http://www.kopri.re.kr/infra/kingsejong/kingsejong_about/kingsejong_about_facility01/kingsejong_about_facility01.cms.
[190]Ibid.
[191] http://www.kopri.re.kr/infra/dasan/dasan_about/dasan_about_facility/dasan_about_facility.cms.

South Korea built its research icebreaker, *Araon*, with objectives of conducting omni-directional and all-weather ocean research activities in the world's oceans including Arctic and Antarctic frozen areas, and supplying the Arctic and Antarctic stations.[192] *Araon* is a KR PL-10(DAT -30) grade research ice breaker, capable of continuous breaking of 1m thick flat ice at the speed of 3 knots. It holds two different types of laboratory: dry type laboratory (Computer room, LAN office, uninterruptible power supply room, sonar and earth physics laboratory, ocean equipment room, meteorological data processing room, electronic measurement room and gravity measurement room) and wet type laboratory (Soil specimen processing room, Baltic room, ocean water analysis and processing room, autosal room, chemical analysis laboratory, biology laboratory and others). *Araon* is also equipped with a helicopter, barge (10 m power Bessel capable of carrying 20 ft container) and Work vessel (7 m power vessel capable of carrying out research and supporting).[193]

The ROK has been pushing ahead with its plan to construct a continental station in Antarctica since 2006, investing US$ 70 million.[194] It has decided to build its continental station on the Far Southeast of Antarctica at Terra Nova Bay by 2014.[195] The new station is expected to be used as a base, together with the current King Sejong Station, for scientific research to respond to global warming.[196] South Korea is now planning to design the station concept and construction, submit a comprehensive environmental evaluation (CEE) appraisal on the candidate construction site to the international community (ATCM) and obtain approval for the second station.[197]

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[192] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.
[193] http://www.kopri.re.kr/infra/araon/araon_about/araon_about_kopri_icebreaker/araon_about_kopri_icebreaker.cms.
[194] Ocean Thinker, "The Construction of the Antarctic Continental Station,", *Haeyang Jungbo* No.32, 2007, pp.51-54.
[195] Letter Interview with Kim Yedong, Principal Researcher of KOPRI and Former Chairman of Asian Forum for Polar Sciences (AFOPS), April 18, 2010.
[196] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.
[197] Phone Interview with Um Kiho, manager of Maritime Territory Development Office, Ministry of Land, Transport and Maritime Affairs, April 14, 2010.

4.0 The Role of Antarctica in the South Korean Economy

…there are very few economic benefits South Korea could gain from its Antarctic activities[198]

…the level of direct economic effect expected from South Korea's Antarctic activity and research is minimal[199]

…Antarctic research is not for economic development, but only for scientific purposes[200]

Considering ROK's economic motivations regarding its Antarctic research, Antarctica seems to allow neither realists nor liberalists to win victory over one another. No matter how South Korea seeks to pursue its national economic interests in Antarctica, it seems to fully understand nothing can be done on its own under the Antarctic Treaty System and now is not a good time to challenge the current system. At the same time, however, only those nations with enough resources and national power could make economic investment in Antarctica. Therefore, no matter how good intentions and contributions to the benefit of the whole world Seoul seems to have, it has sought and will seek to make the most use of its investment for its present and future economic interest.

It is hard to deny that South Korea perceives its Antarctic activities as its contribution to the common prosperity of all humanity rather than as economic activities that will directly benefit itself.[201] Having been one of the greatest beneficiaries of international aid, and being one of the most economically developed nations, South Korea feels it is its moral responsibility to actively participate in international efforts to find solutions to serious global problems such as climate change.[202] However, at the same time, the Korean government seeks to produce short-term outcomes in order to use the people's taxes in a more productive

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198 Letter Interview with Kim Yedong, Principal Researcher of KOPRI and Former Chairman of Asian Forum for Polar Sciences (AFOPS), April 18, 2010.
199 Letter Interview with Choi Doyung, Manager of Big Science Policy Office, Ministry of Education, Science and Technology, April 23, 2010.
200 Phone Interview with Um Kiho, Manager of Maritime Territory Development Office, Ministry of Land, Transport and Maritime Affairs, April 14, 2010.
201 Letter Interview with Kim Yedong, Principal Researcher of KOPRI and Former Chairman of Asian Forum for Polar Sciences (AFOPS), April 18, 2010.
202 Phone Interview with Lee Jongik, Principal Researcher of Polar Global System Research Department, KOPRI, May 14, 2010.

way.[203] The most representative example is ROK's scientific research on resources exploration and development in the Antarctic Ocean and continent.

(1) Antarctica as a repository of future energy and food resources

The Antarctic Treaty System indicates all Antarctica-related treaties, documents and research institutes established after the Antarctic Treaty was adopted in 1959.[204] Article 13 stipulates that the present Treaty shall be subject to ratification by the signatory States, and other states may be invited to accede to the Treaty with the consent of all the Contracting Parties (Article XIII), which undoubtedly shows the closed intention of the Treaty to protect the vested rights of the members in the System. Accordingly, those nations outside the Antarctic Treaty are not happy with the closed system and insist that the mineral resources in the Antarctic region be handled as are the common heritage of human beings like abyssalbenthic resources.[205] On the other hand, 28 consultative (voting) members including South Korea do not accept the concept of 'the common heritage of human beings', maintaining that, unlike the abyssal zone, Antarctica is not a region beyond national jurisdiction, but has had sovereignty claimed over it.[206]

South Korea understands that the only way to obtain the right to exploit resources in the Polar Regions is to maintain a certain degree of scientific activity in those regions through its permanent bases, and produce research outcomes so that its contributions to the global community cannot be denied. In this way, Seoul expects to compete with a relatively small number of nations actively involved in Antarctic research for exploitation of resources. This principle applies to ROK's strategy to claim its right to resources development in the Arctic. Ironically, South Korea has no vested rights in terms of sovereignty over the Arctic due to its geographical remoteness, while it has won and enhanced its right to speak about Antarctic affairs as a consultant party. In this vein, what Seoul fears with regard to its right to exploit resources in the Arctic is that the five Arctic Coastal nations might jointly declare their

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[203] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[204] Kang Ryang, "A Study on International Environmental Regime ;The Case of the Antarctic Treaty System," *KORDI, Ocean and Polar Research* Vol.28, No.2, 2006, pp.163-173.
[205] http://www.ckjorc.org/ka/view.asp?id=452, China-Korea Joint Ocean Research Centre.
[206] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.

sovereignty over the region.[207] However illegitimate the joint declaration may sound, the world history, from an empirical point of view, shows how hard it is to completely invalidate an agreement signed among nations.

In order not to lose its right to resources in the Arctic, South Korea promotes the idea that the Arctic is 'the common heritage of human beings'.[208] At the same time it continues to do scientific research in the region through the Dasan Base so that it can maintain that any nation be given the right to resources in the Arctic as long as it has contributed to the world community by means of scientific research. Together with China and other parties concerned, South Korea has been emphasizing that the right to scientific research does not belong only to the coastal nations but to all nations, sensing that compared with Antarctica, it would be relatively easy to develop the Arctic, and therefore, it would be hard over a long period of time to keep the coastal nations from exploiting and developing resources.[209]

South Korea has been investigating mineral resources and fossil fuels in Antarctica while avoiding terms such as "resources development" or "resources exploration".[210] In particular, it has long been investigating crude petroleum and methane hydrate, and found that, unlike other mineral resources, crude petroleum is highly profitable,[211] and methane hydrate is worthy to be regarded as a future energy resource.[212] Seoul has estimated that over 45 billion barrels of crude petroleum, natural gas and gas hydrate are buried under the continental shelf.[213] It has been preparing to promptly handle the resources development in preparation for the scheduled review of the Protocol on Environmental Protection by developing its resource exploration technology and drawing a resource distribution map.[214]

As one of the poorest nations in terms of natural resources, South Korea has long been looking for energy resources outside the Korean peninsula. Moreover, as a manufacturing and

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[207] Ibid.
[208] http://www.ckjorc.org/ka/view.asp?id=452, China-Korea Joint Ocean Research Centre.
[209] Ibid.
[210] Phone Interview with Lee Jongik, Principal Researcher of Polar Global System Research Department, KOPRI, May 14, 2010.
[211] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[212] Phone Interview with Lee Jongik, Principal Researcher of Polar Global System Research Department, KOPRI, May 14, 2010.
[213] Jung Ho-sung, Principal Researcher, Division of Polar Life Science, KOPRI, "2005 experience of Antarctica," 2006, http://cafe.naver.com/poletopole2.cafe?iframe_url=/ArticleRead.nhn%3Farticleid=1701.
[214] Phone Interview with Lee Jongik, Principal Researcher of Polar Global System Research Department, KOPRI, May 14, 2010.

export-oriented nation, it has found it necessary to diversify its energy sources and jointly develop petroleum and natural gas with resource rich nations.[215] In terms of obtaining secure energy sources, South Korea has been paying attention to the Polar Regions. In particular, the Korean Ministry of Education, Science and Technology signed a memorandum of agreement for polar science and technology cooperation with its Chinese counterpart in order to catch up with advanced western nations in polar development.[216] In the same vein, South Korea and Chile are cooperating with each other in Antarctic development at a working-level. During the 2009 summit meeting with President of Chile, Michele Bachelet, President Lee expressed his interest in Antarctica and decided to sign a memorandum of agreement for Antarctic development and mining cooperation.[217]

In addition to energy resources in the Polar Regions, ROK has shown its interest in polar marine products. It has estimated that the output of the polar marine products surpasses the total production of the marine products from all the other waters in the world.[218] In particular, it has investigated that there are 5000 million to 7500 million tons of krill, Patagonian toothfish and squid in the Antarctic Ocean.[219] It was for fishing krill that South Korea first entered into Antarctica in 1978.[220] At the moment the ROK is catching krill, Patagonian toothfish and *Martialia hayadesi* (squid). The annual catch of krill is about 100,000 tons, which are made into processed food and farming feed.[221] South Korea is also fishing Patagonian toothfish, which is of great market value, and *Martialia hayadesi*, which the ROK considers as having a great potential as a future food resource.[222]

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[215] Ministry of Knowledge Economy, http://www.mke.go.kr/community/core/core0110.jsp.
[216] "한.중, '자원의 보고' 극지개발 손잡는다," ("Korea and China cooperate for Antarctic resources development,") *Yunhap News*, May 27, 2008.
[217]" 한-칠레 정상회담...남극 개발 논의" ("Korea-Chile Summit…discuss Antarctic development") *YTN TV News*, 2009-11-11.
[218] Lee Hong-gum, President of KOPRI, "Pay more attention to *Araon* to be a leading polar research country," *Dong-A Daily*, September 14, 2009.
[219] Jung Ho-sung, Principal Researcher, Division of Polar Life Science, KOPRI, "2005 experience of Antarctica," 2006, http://cafe.naver.com/poletopole2.cafe?iframe_url=/ArticleRead.nhn%3Farticleid=1701.
[220] Jang, Soon-gun, Captain of the 8th Winter Research, "The Antarctic Continent and Korea's Antarctic Research," *Gwahak Sasang*, No.34, 2000, pp.184-199.
[221]http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_ecosystem/antarcticnearth_ecosystem_resource/antarcticnearth_ecosystem_resource.cms.
[222] Kim Doo-nam, "Distribution of Patagonian toothfish(Dissostichus eleginoides) by bottom longliner in the southeastern Atlantic Ocean," *Journal of the Korean Society of Fisheries Technology* Vol.44, No.4, 2008, pp.304-311.

The Korea Polar Research Institute (KOPRI) has been doing research on the volume and distribution of krill in the water around the South Shetland Islands, which has been one of the main krill fisheries for years.[223] In this research, ROK has been conducting marine acoustic surveys using a science fishery detector and general oceanographic investigation to find out the physical, chemical and biological traits of the inhabiting environment of the krill.[224] Discovering that the volume of the krill significantly changes every year due to the changing inhabiting environment, South Korea has been conducting research on the causes of the environmental change to effectively manage the krill resources.[225] Considering the quantity and nutritional value of the krill, South Korea strongly believes the krill is a future food resource that will not run out and expects a great economic effect once it finishes establishing its infrastructure on which it will begin fishing in earnest.[226]

South Korea has learned an important lesson from its deep seabed mining ventures and the lesson has confirmed that it should continue its scientific activities in the Polar Regions for winning both short-term and long-term rights to the development of Polar resources.[227] The important lesson is that the current world community recognises that those nations who show initiative in making an investment or engaging in 'the common heritage of human beings', have vested rights to the exploitation of the heritage. To illustrate, South Korea first entered into the development of deep seabed mineral resources in the 1980s. In 1983, the ROK carried out its first deep seabed exploration by renting a research ship from the University of Hawaii, and since the *Onnuri*, Korea's multi-purpose oceanographic research vessel, was launched in 1992, it has conducted seabed exploration independently.[228] After two years, by meeting the requirements of the United Nations, Seoul was granted an 150,000 ㎢ appointed mine lot of the Clarion-Clipperton Fracture Zone, one of the open waters in the Pacific, as the 7th nation by the International Seabed Authority (ISA) affiliated

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[223] See for example, Kang Don-hyuk, "Acoustic Estimate of the Krill (Euphausia superba) Density between South Shetland Islands and South Orkney Islands, Antarctica, During 2002/2003 Austral Summer," *KORDI, Ocean and Polar Research* Vol.27, No.1, 2005, pp.75-86.

[224] Shin Hyung-chul, *Research on the Development of Antarctic Marine Living Resources*, (Ahnsan: KORDI, 2007), pp.166-179.

[225] Ibid. pp.228-239., p.430.

[226] Phone Interview with Yang Eunjin, Principal Researcher of Polar Climate Research Department, KOPRI, May 13, 2010.

[227] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.

[228] Hyung Kisung, Principal Researcher of Deep-sea & Marine Georesources Research Department, Korea Ocean Research & Development Institute, "[해양시대가 열린다]태평양 '망간단괴' 개발광구,"("Ocean time comes: development mine lot for the Pacific manganese nodule ,") *Hankook Daily*, April 22, 2007.

to the UN.[229] Moreover, after fulfilling the duties imposed by the ISA on the seven initiating investors for eight years, ROK own development mine lot was approved, which is half of the previously appointed mining area.[230]

The UN Conference of the Parties passed a special resolution to acknowledge the scientific achievements of the seven initiating nations who had invested in the development of deep seabed resources and allow them, to some extent, to take advantage of those mining areas they had discovered.[231] For instance, when a nation has discovered two mine lots, it is supposed to report its discovery to the International Seabed Authority (ISA). Then, ISA takes one mine lot for the world community in the name of 'the common heritage of human beings' and allows the nation to own the other.[232] Under this system, South Korea has been exploring the South and North of the Pacific for mining areas so that it will be able to obtain the exclusive right to develop the best lots for Cobalt-rich Manganese-crusts and deep seabed thermal deposits in 2010.[233] Furthermore, it has invested in developing its own deep seabed mining system to exploit 3 million tons of manganese nodule every year, and establishing a detailed process to smelt manganese nodule and a commercialised smelting factory by 2010.[234]

With the lessons learned from its experience in deep seabed resources development, South Korea expects that the efforts of initiating nations will be acknowledged in Antarctic development after the Protocol on Environmental Protection is reviewed in 2048.[235] On the other hand, there is a doubt about the presumption that Antarctica will be developed in the same way as a deep seabed. Dr. Jang, one of the most eminent of Korea's Antarctic experts, says that even after the review of the Protocol, Antarctic development will continue to be

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[229] Kim Ki-hyun, "The future and value of abyssalbenthic mineral resources," *Journal of the Ocean Culture Foundation* No.14, 2006, pp.185-191.
[230] http://www.kadom.or.kr/korea/business/business_01_01.asp, Korea Association for Deep Ocean Minerals Development.
[231] Choi Sung-Doo, "International Ocean Issues and Policy Regime," *Journal of the Korean Society of Marine Environment and Safety* Vol.12, No.2, 2006, pp.115-123.
[232] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[233] http://www.kadom.or.kr/korea/business/business_01_01.asp, Korea Association for Deep Ocean Minerals Development.
[234] Hwang Suk-won, "Economic Assessment of Manganese Nodules Mining," *Journal of the Korean Society of Oceanography* Vol.13, No.3, 2008, pp.260-270.
[235] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.

restricted and a sovereignty claim over the region will disappear.[236] From the Korean government's point of view, however, resources exploitation is the top priority of Korea's polar research.[237] Every nation involved in Antarctic research has kept its research intention and outcomes of resources exploration and development as state secrets, unlike other Antarctic scientific research results that have been shared with all nations. South Korea is no exception in that case. It does not share with other nations such confidential information as an estimated amount of crude petroleum or an oilfield it has discovered.[238]

ROK has already discovered that an enormous amount of methane hydrate, which Korea can use for 300 years at the same rate as its current use of natural gas, is buried around the King Sejong Station.[239] Based upon its accumulated experience in Antarctica, South Korea is also conducting research on gas hydrate development in the Arctic.[240] Economic interests are definitely one of the motivations of Seoul in Antarctica.

(2) Antarctica and ROK's shift from manufacturing industries to technology and knowledge-based industries

The South Korean economy had traditionally been heavily dependent on its manufacturing industry. However, in recent years, Seoul has felt it necessary to transform its economy from the traditional paradigm of economic growth into a knowledge-based economy for its survival strategy in the unlimited competition of the globalised world.[241] Among the main growth factors of the past economy, South Korea has severely experienced the limitations of its resources and low population growth, and had the efficiency of its capital investment dropping sharply in the more diversified economic structure.[242] To illustrate the limitations of economic growth, the three most representative industries are the mobile phone, semi-

[236] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[237] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[238] Phone Interview with Lee Jongik, Principal Researcher of Polar Global System Research Department, KOPRI, May 14, 2010.
[239] Lee Honggum, President of KOPRI, "Antarctica, a natural proving ground full of resources," *The Newsis*, March 5, 2008.
[240] Kim Bo-yung, "A Study on the Climate Change and the Policy of Natural Gas Exploitation on the Arctic Region," *Journal of the Korean Resource Economics Association* Vol.18, No.4, 2009, pp.787-815.
[241] Kim Dae-hwan, Dean of School of Commerce, Inha University, "Knowledge-based economy and vicious circle of the gulf between rich and poor," *Yungnam Daily*, February 9, 2004.
[242] Phone Interview with Ahn Changyong, Secretary of Office of Industrial Economic Policy, the Ministry of Knowledge Economy, June 1, 2010.

conductor and shipbuilding sectors. Despite the steady growth in their sales and overseas market share, the virtual profits they make from their sales are not as big as the figures of their sales volume. It is 2 to 8% of the sales that the Korean corporations, whether they are in deficit or even in bankruptcy, pay for loyalty to foreign enterprises who have secured the patents of original technology and set standards; Qualcomm for mobile phone, Sandisk for flash memory, GTT for LNG carrier, and so on.[243]

Faced with economic stagnation due to the traditional inefficient growth paradigm, South Korea decided to follow the economic model of advanced nations who had already initiated economic reforms corresponding to the diversified global economic structure since 1994.[244] In pursuit of the new economic model, Seoul has been trying to secure its knowledge base with science in the centre of it, expecting innovation and improvement of productivity from science.[245] President Lee Myung-bak took office in 2008 and merged the Ministry of Commerce, Industry, and Energy with elements of the Ministry of Information and Communications, the Ministry of Science and Technology, and the Ministry of Finance and Economy. The resulting body was the Ministry of Knowledge Economy.[246]

The Ministry of Education, Science and Technology announced that it had confirmed the Lee government's Science Technology Primary Plan, "Becoming a S&T Power Nation through the "577 Initiative", at the 28th meeting of the Nation's Science and Technology Committee chaired by President Lee.[247] The objective of the 577 Initiative is for ROK to become the seventh strongest science and technology nation by increasing its R&D investment to 5 per cent of the GDP by 2012, fostering its chosen seven areas of technology and strengthening the global competitiveness of its seven core systems.[248] More specifically, the Lee government planned to increase the nation's budget for R&D from the previous Roh administration's US$40 billion to US$66 billion, expanding the investment proportion for

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[243] Song Jae-yong, Professor of Business School, Seoul National University, "Simple manufactuing industries cannot survive a knowledge economy," *Chosun Weekly Biz*, July 27, 2007.
[244] Phone Interview with Ahn Changyong, Secretary of Office of Industrial Economic Policy, the Ministry of Knowledge Economy, *2010-06-01*.
[245] Ministry of Education, Science and Technology, *577 Initiative*, Seoul, 2008.
[246] http://www1.mke.go.kr/language/eng/about/history.jsp.
[247] Department of Policy Coordination, Ministry of Education, Science and Technology, *President Lee chairs the 28th meeting of the Nation's Science and Technology Committee*, Seoul, August 12, 2008.
[248] Ministry of Education, Science and Technology, *577 Initiative*, Seoul, 2008.

original technology from 25 per cent to 50 per cent.[249] In addition, President Lee planned to concentrate on developing 50 essential technologies and 40 candidate technologies from the seven chosen areas of technology such as key industry technology, new industry creation and knowledge-based service.[250]

In 2009, the Lee government established the National Research Foundation of Korea (NRF) with an objective of promoting the development of national academics and science and technology, and to improve research capacity by effectively and fairly cultivating and utilizing manpower in relation to the activities being promoted for academic and research development.[251] Fully funded by the Ministry of Education, Science and Technology, the NRF is aimed at making South Korea the seventh strongest knowledge nation and a global leader, especially by supporting the fundamental research fields.[252] The research management system of the NRF assists the Ministry of Education, Science and Technology in designing, planning and budgeting science enterprises or R&D.[253]

The Ministry of Education, Science and Technology takes into consideration three aspects of technology before it launches new science businesses or R&D: pure technology, original technology and development technology. Among them, great attention is paid to the aspect of pure technology such as polar science upon which original technology and development technology are built, which will lead to securing marketability.[254] The Korean government is well aware that pure science and big science such as space exploration can be time-consuming in terms of producing tangible outcomes and bringing economic effects due to lack of demand for such sciences in the market.[255] Likewise, Seoul is not expecting immediate economic profits from the pure science fields on which the KOPRI has been working in the Polar Regions,[256] but sees the potential value of the fundamental sciences.[257]

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[249] Sung Yun-hwan, "Symposium on IT-SW policy," *Hankookjungbogisoolhaksooldancheyunhaphoi*, 2009, pp.11-26.
[250] Ministry of Education, Science and Technology, *577 Initiative*, Seoul, 2008.
[251] http://www.nrf.go.kr/html/en/about/about_02_01.html.
[252] Phone Interview with Cho Eunhye, Researcher of Office of Policy Promotion, NRF, June 10, 2010.
[253] Ibid.
[254] Phone Interview with Oh Sungbae, Security of Office of Science&Technology Policy, the Ministry of Education, Science and Technology, June 10, 2010.
[255] Phone Interview with Ahn Changyong, Secretary of Office of Industrial Economic Policy, the Ministry of Knowledge Economy, June 1, 2010.
[256] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[257] Lee Honggum, President of KOPRI, "Antarctica, a natural proving ground full of resources," *The Newsis*, March 5, 2008.

In particular, the KOPRI has been doing research in preparation for the uncertain future such as how to react to climate change and how to develop the Polar Regions in the future. The achievements and knowledge obtained from this research will be the basis of ROK's future economic development, for publishing research papers and obtaining patents are the prior steps to industrial development.[258]

South Korea's polar research can be understood as a part of its big science research. There are five disciplines in Seoul's big science; space, aviation, ocean, nuclear fusion and polar exploration.[259] Big science is a systemic scientific field where each discipline interacts with, and reinforces one another.[260] As big science is a field where a massive amount of manpower and capital is concentrated so that scientists from different disciplines with a clear objective can do research in cooperation with one another, the government hopes to accomplish the development of basic science in a short time.[261] The accomplishment of big science offers a solution to the limitation of the existing science and technology, which gives birth to a new industry.[262]

It has become unavoidable for South Korea to rapidly transform its economy from a traditional manufacturing-based economy into a knowledge economy. The transformation is obviously a big challenge to South Korea because when it comes to the creation and use of knowledge, the economy of size plays a vital role.[263] In other words, a knowledge-based economy is more favourable to a large-scaled economy such as the United States and Japan who comprise over 60 per cent of the world's R&D.[264] However, it seems that ROK has been successful in adopting the totally new paradigm of economic growth. In 2005, over 5million Koreans, which is 23 per cent of the nation's total labour, were engaged in knowledge-based industries.[265] This figure is expected to increase up to 62.3 per cent by

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[258] Phone Interview with Kang Hyunwoong, Manager of Big Science Foundation Division, the Ministry of Education, Science and Technology, June 3, 2010.
[259] Phone Interview with Ha Taejung, Captain of Technology Fusion Research Team, New Growth Engines Research Centre, Science and Technology Policy Institute, June 23, 2010.
[260] Phone Interview with Kang Hyunwoong, Manager of Big Science Foundation Division, the Ministry of Education, Science and Technology, June 3, 2010.
[261] Science and Technology Policy Institute, "2010 Science and Technology Policy,", *STEPI Insight* No.37, 2010.
[262] Lee Won-hee, "The big sciences and technologies we should note," *Samsung Economic Research Institute, CEO Information* No.719, 2009, p.14.
[263] Hong Yu-soo, "Knowledge-based economy and the future of Asia," *Science and Technology Policy Institute, Kwahak Kisool Jungchaek* Vol.17, No.6, 2007, pp.1-4.
[264] Ibid.
[265] SAESAYON, *Conditions for opening a new society*, (Seoul: Shidaeui chang, 2008), p.38.

2020, while the portion of the labour engaged in manufacturing industry will decrease to 25.2 per cent by 2020.[266] Seoul has proved through its development of Information Technology that despite being dwarfed in economic size by Beijing and Tokyo, it can outdo the two Asian economic giants in knowledge competition.[267] After securing its global competitiveness in the IT industry, the South Korean government has shifted its largest portion of R&D investment from the IT industry into the biotechnology industry which is one of the most important scientific fields in Korea's Antarctic research.[268]

The Ministry of Knowledge Economy transforms scientific knowledge produced by the Ministry of Education, Science and Technology and the KOPRI into the knowledge economy by increasing the efficiency, investment value and marketability of the knowledge.[269] Biotechnology is one of the examples. The Ministry has chosen Biotechnology as one of the fields of its 'New Growth Engine'.[270] The Ministry of Knowledge Economy has been trying to develop Korea's biotechnology industry as its future growth engine by promoting the industrialisation of biotechnology, expecting to be the world's seventh strongest in biotechnology by 2015.[271] Its economic objective for the biotechnology industry is to earn US$20billion from healthcare biotechnology exports and US$ 5billion from industrial biotechnology exports by 2015.[272]

Korea's small and medium enterprises have been reluctant to invest in knowledge-based industries, which are inevitably accompanied by high risk and a long time in order to secure fundamental technology. As a solution to this barrier hindering the successful transformation into a knowledge-based economy which is expected to increase Korea's GDP from US$20,000 in 2010 to US$40,000 in 2020,[273] the Korean government is creating new products and industries by obtaining pure, original and development technology through the Ministry of Education, Science and Technology and its affiliated research institutes such as

[266]http://www.mke.go.kr/news/bodo/bodoView.jsp?seq=59236&pageNo=1&srchType=1&srchWord=&pCtx=1.
[267] Hong Yu-soo, "Knowledge-based economy and the future of Asia," *Science and Technology Policy Institute, Kwahak Kisool Jungchaek* Vol.17, No.6, 2007, pp.1-4.
[268] Phone Interview with Sun Minjung, Principal Researcher of Korea Biotechnology Industry Organisation, June 23, 2010.
[269] Phone Interview with Ahn Changyong, Secretary of Office of Industrial Economic Policy, the Ministry of Knowledge Economy, June 1, 2010.
[270] High-tech Information Analysis Institute, *New growth force industries and business strategy*, (Seoul: Jinhan MNB, 2009), p.82.
[271] http://www.1.mke.go.kr/common/jsp/print.jsp.
[272] Ibid.
[273]http://www.mke.go.kr/news/bodo/bodoView.jsp?seq=59236&pageNo=1&srchType=1&srchWord=&pCtx=1.

the KOPRI.[274] The Korean government regards a well-balanced combination of government-driven fundamental technology and capital invested by the private sector as the key to a successful knowledge economy.[275] In this vein, the Korean government has constantly increased its funding in polar sciences.[276]

(3) Antarctica and Korea's national brand image

…KOPRI has been raising Korea's national brand awareness by promoting our research station.[277]

The KOPRI carries out all its polar research based on two visions: it contributes to world prosperity by providing solutions to the issues of the global environment, energy and resources, and it secures Korea's national interest by enhancing Korea's national prestige,[278] which can be divided into economic interest and political interest. This section will examine how Korea's polar activity contributes to its national position in the international arena, and how the improved national image will benefit Korea economically.

The Samsung Economic Research Institute (SERI) and the Presidential Council on National Branding (PNCB) have jointly developed a model of national brand index, called SERI-PCNB NBDO(Nation Brand Dual Octagon). 'Dual' presents real performance and image, while 'Octagon' consists of eight categories -economy/enterprises, science/technology, infrastructure, government efficiency, traditional culture/nature, contemporary culture, people and celebrities.[279] According to this model, South Korea is ranked the 19th in real performance and 20th in image among the 50 nations. Compared with the average brand of OECD members, Seoul is close to the average with 97 per cent in real performance, while its brand image is underestimated with 89 per cent.[280]

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[274] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[275]http://www.mke.go.kr/news/bodo/bodoView.jsp?seq=59236&pageNo=1&srchType=1&srchWord=&pCtx=1.
[276] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.
[277] Lee Honggum, President of KOPRI, "Antarctica, a natural proving ground full of resources," *The Newsis*, March 5, 2008.
[278] http://www.kopri.re.kr/index.jsp.
[279] Lee Dong-hoon, "Investigation Results of National Brand Index," *Samsung Economic Research Institute, Issue Paper*,2009, p.1.
[280] Ibid. p.3.

Table 1 below indicates that Korea is ranked within the top 10 of real performance in the three categories- science/technology(4^{th}), contemporary culture(8^{th}) and celebrities(10^{th}).

Table 1.

Real performance ranking	Total Ranking	Economy/ Enterprises	Science/ Technology	Infrastructure	Government Efficiency	Traditional Culture/ Nature	Contemporary Culture	People	Celebrities
1	US	US	US	Sweden	Sweden	US	US	Sweden	US
2	Germany	Germany	Japan	Switzerland	Canada	France	Germany	Norway	Germany
3	France	Japan	Germany	Singapore	US	China	Japan	Switzerland	UK
4	UK	France	**ROK**	Denmark	Australia	Italy	China	Ireland	France
5	Japan	UK	Finland	US	Germany	Spain	France	Finland	Russia
6	Sweden	Switzerland	UK	Iceland	Switzerland	Germany	UK	New Zealand	Japan
7	Switzerland	Netherlands	Canada	Austria	Canada	Brazil	Spain	Australia	China
8	Canada	Sweden	Taiwan	Norway	UK	Australia	**ROK**	Netherlands	Italy
9	Australia	Canada	Switzerland	Belgium	France	UK	Australia	Austria	Brazil
10	Netherlands	China	Sweden	Finland	Netherlands	Mexico	UAE	Singapore	**ROK**
Note	**ROK(19)**	**ROK(14)**	_	**ROK(25)**	**ROK(24)**	**ROK(37)**	_	**ROK(33)**	_

Source: Lee Dong-hoon, "Investigation Results of National Brand Index," *Samsung Economic Research Institute, Issue Paper*, 2009.

According to Table 2, Except the category of science/technology(9^{th}), South Korea shows a poor image in all the categories of image ranking.

Table 2.

Image ranking	Total Ranking	Economy/ Enterprises	Science/ Technology	Infrastructure	Government Efficiency	Traditional Culture/ Nature	Contemporary Culture	People	Celebrities
1	France	Japan	Japan	Sweden	Sweden	France	US	Sweden	US
2	Japan	Germany	Germany	France	Canada	Greece	France	Canada	France
3	Sweden	US	Sweden	Japan	Switzerland	Italy	Italy	Switzerland	UK
4	UK	France	France	Germany	France	Egypt	UK	Japan	Russia
5	Germany	UK	US	Switzerland	UK	Mexico	Japan	Netherlands	Germany
6	US	Switzerland	UK	Canada	Germany	Spain	Germany	Belgium	Italy
7	Switzerland	Sweden	Switzerland	US	Netherlands	Sweden	Spain	UK	Japan
8	Canada	Canada	Canada	UK	Japan	UK	Canada	France	Spain
9	Netherlands	UAE	**ROK**	Netherlands	Australia	Switzerland	Sweden	Germany	Greece
10	Italy	Australia	Australia	Australia	Spain	New Zealand	Australia	Australia	China
Note	**ROK(20)**	**ROK(15)**	_	**ROK(21)**	**ROK(27)**	**ROK(34)**	**ROK(24)**	**ROK(22)**	**ROK(21)**

Source: Lee Dong-hoon, "Investigation Results of National Brand Index," *Samsung Economic Research Institute, Issue Paper*, 2009.

There has been a significant gap in both real performance and image between ROK and the G7 - the United States, France, Germany, Japan, Canada, the United Kingdom and Italy. Seoul has particularly found it urgent and necessary to improve its national brand image compared with its real performance.[281] President Lee stressed the importance of enhancing the nation's branding during the National Liberation Celebrations in 2008, *"Korea's national brand value is only 30% of our economic power…I will upgrade our national brand value to that of an advanced nation during my term of office."*.[282] President Lee launched the PCNB(Presidential Council on National Branding) in January 2009, expecting an enormous economic benefit from reducing so-called "Korea Discount" through the work of the PCNB.[283] "Korea Discount" refers to the phenomenon that Korean firms are valued lower than firms in other countries due to the negative image of the nation.[284] The most representative negative images of Korea are human rights abuse, the financial crisis, the anti-establishment movement and the threat of North Korea's missiles.[285] Although Korea has become socially and politically much more stable than in the past and its level of human rights has made remarkable progress, it is still seen by many foreigners in the image of poverty, suppression, dictatorship, student demonstration and war, which has brought about a great economic loss for the nation.[286]

The Ministry of Commerce, Industry and Energy outlined seven economic benefits gained from a strong national brand: increase of currency stability, recovery of credibility from foreign investors, improvement of international credit ratings, increase of exports, increase of inbound tourists, easier accessibility to global market and enhanced national power to protect the domestic market through global competitiveness.[287] Recognising the importance of nation branding, the Korean government founded the Committee of National Image (CNI) in

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[281] Ibid. p.6.
[282] *SBS TV News*, August 15, 2008.
[283] Uh Yundae, Chairman of PCNB, "The Korean national brand value underestimated by 30%," *The Asia Economy*, March 17, 2009.
[284] Suh Jung-won, "Korea Discount: Diagnosis and Remedy," *Korean Securities Association, Asia-Pacific Journal of Financial Studies* Vol.36, No.4, 2007, pp.621-655.
[285] Yum Sung-won, "A study on the trend of Korea national image research," *Korea Advertising Society, Kwangohak Yungoo* Vol.14, No.3, 2003, pp.87-117.
[286] Lee Chul-han, "A research on Public Relations for National Image Improvement," *Dongkook University, Sahoi Kwahak Yungoo* Vol.15, No.2, 2009, p.157.
[287] Ministry of Commerce, Industry and Energy, *A research on ways to improve brand value of nation and enterprise*, Seoul, 2003.

2002 and determined 'Dynamic Korea' as its national brand to promote.[288] The CNI was designed to wipe out the negative images of Korea, and promote dynamic and advanced Korea, expecting a halo effect from the brand of 'Dynamic Korea'.[289]

Without a considerable improvement of real performance, however, enhancement of a nation's image is highly unlikely. Focusing too much on image promotion without a substantial change in real performance will bring about negative results.[290] Therefore, it is important to balance between image improvement and enhancement of real performance in terms of a successful nation branding strategy. According to SERI-PCNB NBDO, South Korea shows poor real performance in infrastructure, government efficiency and people, while it looks strong for science/technology in both real performance and image. In SERI-PCNB NBDO infrastructure refers to green ecological infrastructure, government efficiency to socio-political stability and contribution to the world community, and people to global citizen consciousness.[291] In order to be successful in enhancing the national brand SERI-PCNB NBDO suggests ROK's improving its real performances in infrastructure, government efficiency and people, and strengthening its strong area by promoting its science and technology overseas**.** [292]

What ROK seeks to gain from its Antarctic activities is to raise awareness of global environmental issues and the necessity of promoting environment-friendly policies both inside and outside Korea, to contribute to the prosperity of the world community by conducting scientific research on global climate change, and to inspire the Koreans with not only the spirit of patriotism but global citizen consciousness as well.[293] Therefore, those concrete goals of Seoul's Antarctic research correspond to its efforts to gain a halo effect from enhancing its national brand image. The PCNB is recognising a close link between Seoul's Antarctic research and Seoul's brand value. The PCNB expects Seoul's Antarctic

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[288] Government Information Agency, *Roh Government's Five Years Policy Promotion White Paper*, Seoul, 2008, pp.336~340.
[289] Park Jong-min, "A study on the actual work of the Korean Overseas Information Service and the committee of national image," *Journal of Korean Association for Public Administration* Vol.37, No.2, 2003, pp.421-444.
[290] Lee Chul-han, "A research on Public Relations for National Image Improvement," *Dongkook University, Sahoi Kwahak Yungoo* Vol.15, No.2, 2009, p.156.
[291] Lee Dong-hoon, "Investigation Results of National Brand Index," *Samsung Economic Research Institute, Issue Paper*, 2009, p.7.
[292] Ibid. p.10-11.
[293] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.

science and technology to provide solutions to global issues such as global warming and contribute to the world community, which will ultimately improve South Korea's national brand value.[294]

A positive image of a nation enhances the competitiveness of the products made in the nation.[295] As Korea's 90 per cent of employment is created by its small and medium enterprises, Korea's revitalisation of its domestic market is totally dependent upon the performance of those enterprises.[296] Therefore, global competitiveness of those small and medium enterprises is essential for Korea to accomplish sustainable economic growth.[297]While Korea's transnational corporations such as Samsung, Hyundai and LG have already secured their global image, the images of its small and medium enterprises and their products are directly related to the image of the nation. In other words, the product prices and exports of Korea's small and medium enterprises are determined by Korea's brand value.[298]

The high level of South Korea's science and technology shown by its achievements in Antarctic research will enhance the nation's brand image, which will ultimately contribute to the credibility of the nation's small and medium enterprises.[299] To illustrate this, after Korea's ship building industry reached its peak, its performance in the overseas market has been withering. In order to revitalise its exports, Korea's ship building industry has shifted its focus to building large vessels, super luxury passenger ships and other vessels with state-of-the-art functions.[300] As far as *Araon* is concerned, Hanjin Group, which is not a Korean major corporation, built Korea's first icebreaker. Since then, Hanjin Group has been enjoying a great promoting effect of its global competitiveness from building *Araon*.[301] Moreover, the building of *Araon* is not only benefiting Hanjin Group alone, but also is expected to create more overseas demand for Korean vessels by enhancing the image of the Korean ship building industry. More

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[294] Phone Interview with Park Sunghwa, Director for Planning and Management, PCNB, May 11, 2010.
[295] Yu Jae-woong, *National Image: theory, strategy and programme*, (Seoul: Communication Books, 2008), pp.46-50.
[296] Interview with Han Seungsoo, Prime Minister of Korea, *Arirang TV*, February 25, 2009.
[297] Jung Yong-kyun, "The Role Of SME's for the Job Creation during the Period from 1990 to 2006," *Korean Academy of Human Resource Management, Injuk Jawon Kwalli Yungoo* Vol.15, No.4, 2008, pp.229~243.
[298] Phone Interview with Park Sunghwa, Director for Planning and Management, PCNB, May 11, 2010.
[299] Ibid.
[300] Ibid.
[301] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.

importantly, the enhanced image of Korea in general from its Antarctic activity will bring a great ripple effect into other Korean industries such as the Korean tourism industry.[302]

(4) Antarctica and Korea's polar research-related industries

Partial technologies obtained from big science such as space development or polar exploration bring a substantial ripple effect into many scientific and industrial sectors.[303] A good example of such a ripple effect is from *Naro*, Korea's first space launch vehicle. *Naro* consisting of a 170 ton liquid engine on the lower part and an eight ton solid engine on the upper section has brought a huge ripple effect into Korea's system engineering, high-tech IT and mechanical engineering.[304] South Korea is investing its resources in space development, expecting a great boost for its industries such as defence economy, aviation industry and location based service.[305]

Likewise, South Korea's polar research is inseparable from its motivation to boost domestic industries. With the request of the government, the KOPRI conducts preliminary research upon which Korea's industries grow rather than carrying out absolute pure scientific study.[306] In addition, like other big science, polar research may bring about the development of application science which directly affects industries.[307] This section will investigate the industrial applications of ROK's six major scientific research areas in the Polar Regions - GeoScience, BioScience, OceanoScience, Paleo/CryoScience, CosmoScience and InfoScience - and the collateral industrial effects generated by operating its stations and icebreaker.

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[302] Phone Interview with Park Sunghwa, Director for Planning and Management, PCNB, May 11, 2010.
[303] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[304] Phone Interview with Ha Taejung, Captain of Technology Fusion Research Team, New Growth Engines Research Centre, Science and Technology Policy Institute, June 23, 2010.
[305] Lee Won-hee, "The big sciences and technologies we should note," *Samsung Economic Research Institute, CEO Information* No.719, 2009, p.4.
[306] Phone Interview with Lee Yukyung, Head of Division of Polar Bio Sciences, KOPRI, August 4, 2010.
[307] Phone Interview with Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August 17, 2010.

One of the most important agendas of ROK's polar research is resources exploration and development.[308] Since, under the current Antarctic Treaty System a nation is not allowed to exploit resources in Antarctica, South Korea conducts preliminary investigation on geological features or explores rocks in preparation for the scheduled review of the Protocol on Environmental Protection.[309] In order to explore resources or other contents without digging the ground or getting into a deep sea, Seoul has been developing technologies and equipment needed for underground and underwater exploration.[310] South Korea has been jointly developing hi-tech exploration equipment with the United States.[311] Although the demand for such hi-tech exploration equipment is not big in the market, since it is of greatly high price, economic effect can be expected.[312] South Korea expects that the development of underground and underwater exploration equipment used for its Antarctic research will contribute to its location-based services and military defence-related industries.[313] For instance, when South Korea's Cheonanam warship was attacked by North Korea and sank on March 26th 2010, the equipment developed for polar resources exploration was used to locate the ship.[314]

Among many polar science disciplines, Bio Technology is the most connected field to industrial development.[315] Although like other nations engaged in Antarctica Seoul is reluctant to explicitly promote the industrial application of its findings, it has been actively conducting BT research in Antarctica.[316] ROK views the Polar Regions as a repository of future life engineering.[317] It has been conducting research on cold region life engineering, cellular anti-freezing substance, cold-active breakdown enzyme and cold-active genetic

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[308] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[309] Phone Interview with Jung Hyunhee, Principal Researcher of Division of the Basic Research in Science and Engineering, NRF, June 21, 2010.
[310] Phone Interview with Jin Yunggun, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.
[311] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[312] Phone Interview with Jung Hyunhee, Principal Researcher of Division of the Basic Research in Science and Engineering, NRF, June 21, 2010.
[313] Phone Interview with Jin Yunggun, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.
[314] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[315] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.
[316] Phone Interview with Lee Yukyung, Head of Division of Polar Bio Sciences, KOPRI, August 4, 2010.
[317] Lee Hong-gum, "The future of big science: Polar Research as a big science," *Science and Technology Policy Institute, Future Horizon Summer 2010*, 2010, p.4-5.

replicase, expecting its ripple effect on application science and industry.[318] To illustrate, ROK has been attempting to secure biomedical cryopreservation technology.[319] It has extracted anti-freezing protein from polar organisms, expecting it to be utilised in pharmaceutical and medical industries for preventing destruction of cells when preserving sperms, stem cells and blood.[320] It is also planning to develop cold region medicine and human physiology-related technology through the research that will be conducted at its Antarctic continental station.[321]

Another key industry that South Korea's polar Bio Technology will benefit is the cosmetic industry. For instance, as Antarctica is exposed to strong ultra-violet radiation, South Korea is extracting the ultra-violet radiation-resistant substances from Antarctic organisms, expecting it to be utilised in its cosmetic industry.[322] In addition, it has been doing research on the possibility of biogas generated by birds inhabiting the Polar Regions, hoping it will contribute to the domestic energy industry.[323] Besides all theses mentioned, Seoul is seeking to solve the issues of food shortage, diseases and energy by utilising undeveloped Antarctic biological resources such as cold weather-resistant crops, medicinal substances and biological catalysts for energy saving.[324]

South Korea is also establishing an environmental infrastructure of analysing and forecasting climate change based on its polar climate research.[325] As climate environmental changes affect the whole globe, the environmental changes in the Polar Regions affect the climate and environment in the middle and low latitudes. Therefore, South Korea expects to understand global atmospheric circulations, courses of typhoons and Asian Monsoon climate from its polar climate research.[326] The KOPRI's research on the ocean and atmospheric circulation in

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[318] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[319] Lee Hong-gum, "The future of big science: Polar Research as a big science," *Science and Technology Policy Institute, Future Horizon Summer 2010*, 2010, p.4-5.
[320] Phone Interview with Lee Yukyung, Head of Division of Polar Bio Sciences, KOPRI, August 4, 2010.
[321] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[322] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.
[323] Phone Interview with Jung Hyunhee, Principal Researcher of Division of the Basic Research in Science and Engineering, NRF, June 21, 2010.
[324] Lee Hong-gum, "The future of big science: Polar Research as a big science," *Science and Technology Policy Institute, Future Horizon Summer 2010*, 2010, p.4-5.
[325] Phone Interview with Ha Taejung, Captain of Technology Fusion Research Team, New Growth Engines Research Centre, Science and Technology Policy Institute, June 23, 2010.
[326] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.

the Polar Regions is expected to enhance its climate or weather-related industries whose aim is preventing natural disasters and reducing the damage by providing short-term and long-term forecasts of climate change.[327] For example, an active volcano of Mt. Baekdoo located on the boundary of China and North Korea is expected to explode in two years. The estimated damage and restoration period can be figured out by the knowledge of the paleoclimate gained from Antarctic glaciers.[328]

In addition to reducing loss of life and property damage, South Korea forecasts that the information about climate, weather, oceans and polar ecosystems gained from the observation of the earth will benefit a variety of businesses such as tourism, industries, disaster and weather information services for agriculture and fishing, and maritime information services for safety in the seaways.[329] Since climate and weather have a great effect on many industries, 'Industrial Weather Information' has recently been commercialised.[330] The climate and weather information gained from polar climate research enables businesses to adjust output of their products in order to maximise their profits.[331]

ROK expects its aviation and electronics industry to benefit from its space observation in the Polar Regions.[332] The Polar Regions are the optimum places for the operation of a polar satellite tracking system as well as for space research.[333] The KOPRI has been observing the polar upper atmosphere in order to predict space weather hindrance that affects the communication and the orbit of a satellite and to prevent the damage of electromagnetic waves.[334] South Korea's research on the polar atmosphere and space is expected to contribute to the development of its aviation industry that is affected by electromagnetic

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[327] Phone Interview with Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August17, 2010.
[328] Phone Interview with Jung Hyunhee, Principal Researcher of Division of the Basic Research in Science and Engineering, NRF, June 21, 2010.
[329] Lee Won-hee, "The big sciences and technologies we should note," S*amsung Economic Research Institute, CEO Information* No.719, 2009, p.9.
[330] Phone Interview with Lee Bangyong, Principal Researcher of Division of Polar Climate Research, KOPRI, August 6, 2010.
[331] Phone Interview with Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August17, 2010.
[332] Lee Won-hee, "The big sciences and technologies we should note," *Samsung Economic Research Institute, CEO Information* No.719, 2009, p.4.
[333] Lee Hong-gum, "The future of big science: Polar Research as a big science," *Science and Technology Policy Institute, Future Horizon Summer 2010*, 2010, p.4-5.
[334] Phone Interview with Lee Bangyong, Principal Researcher of Division of Polar Climate Research, KOPRI, August 6, 2010.

waves, aerosols and typhoons.[335] In particular, ROK expects to experiment with its equipment and technologies needed for the space industry in the Polar Regions, with a notion that preliminary polar research is necessary in order to develop its space industry.[336] In fact, its Antarctic continental station has been designed to develop anti-freezing liquid and its long-distance satellite communication technology, and to test the performance of telecommunication or semiconductor materials.[337]

Seoul is seeking to develop its construction technology and contribute to its construction industry through its building of the second permanent base in Antarctica.[338] Constructing and operating the continental base structures is expected to enhance Korea's structure material technology to prevent fluid, liquid and solid material from being destroyed in a low temperature.[339] As a matter of fact, many freezing land technologies have been tested in preparation of the construction of the continental base. For instance, the effect of the freezing land layer under the structures has been investigated.[340] In addition, South Korea has been promoting its environment-friendly design of the base.[341] With an objective to reduce the emission of carbon dioxide, Korea is planning to build a wind power plant and structures to utilise solar energy for the base,[342] which will contribute to the technology of the domestic energy industry.[343] In short, the accumulated technology of freezing land engineering and ultra-cold engineering, and experience of operating construction equipment in an intense cold land will have a ripple effect on its wind resistant building design and heat-conservation material, which will ultimately lead to the technological development of South Korea's construction and its related industries.[344]

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[335] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.
[336] Phone Interview with Lee Bangyong, Principal Researcher of Division of Polar Climate Research, KOPRI, August 6, 2010.
[337] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[338] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.
[339] Phone Interview with Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August17, 2010.
[340] Phone Interview with Yu Donyun, Principal Specialist of Department of Antarctic Continental Station Construction, KOPRI, August 25, 2010.
[341] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.
[342] Phone Interview with Yu Donyun, Principal Specialist of Department of Antarctic Continental Station Construction, KOPRI, August 25, 2010.
[343] Phone Interview with Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.
[344] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.

South Korea for many years has enjoyed exporting its vessels as the top ranking nation in volume of sales. Because of international competition in terms of its building ordinary vessels, however, South Korea has been putting a lot of effort to win contracts for its high value-added special ships.[345] However, without being accompanied by the development of the ship building material industry ROK has had a difficulty developing new markets for its special ships. Even if it wins a contract, the material or engineering sector that creates an actual high value in building a hull is monopolised by Europe.[346] Under these domestic circumstances, constructing an ice breaker domestically was suggested in order to boost Korea's ship building industry and other related industries. Considering the global environment in which polar research is increasing, the development of the Russian North Sea and Siberia is being promoted in earnest, and the research on the courses of the Arctic Ocean by Norway, Russia and Japan has been completed, the necessity for polar sailing vessels and relevant structures has become more and more feasible.[347] Under the domestic and global circumstances, Seoul decided to seize the momentum, expecting a ripple effect of the domestic construction of its first multi-purpose vessel on the competitiveness of its ship building industry and other domestic industries.

South Korea expects economic benefit in three areas from its designing and building *Araon*. First, in terms of its ship building industry, it is confident in winning more contracts for ice breaking-related vessels. Prior to the construction of *Araon*, Seoul received several enquiries about an ice breaking oil tanker. However, it has been defeated by Europe in the sales competition for the fact that it had not actually built such a special ship before *Araon*.[348] Hanjin Heavy industries has not won a contract for its ice breaker building yet but has enjoyed the increasing sales of its merchant ship since it completed the construction of *Araon* in late 2009.[349] Although the demand for a special ship is not great in the overseas market, Seoul estimates US$300 million sales for three years by obtaining an order for an ice

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[345] Shin Soo-chul, "High value-added special ships and related technology," *Journal of the Society of Naval Architects of Korea* Vol.41, No.2, 2004, pp.4-24.
[346] Phone Interview with Lee Changwoo, Managing Director of Special Ship Sales Department, Hanjin Heavy Industries, August 25, 2010.
[347] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[348] Ibid.
[349] Phone Interview with Lee Changwoo, Managing Director of Special Ship Sales Department, Hanjin Heavy Industries, August 25, 2010.

breaker.[350] Second, ship building-related industries such as the steel industry, the paint industry and interior design business are expected to be upgraded and benefit from building a special ship.[351] To illustrate, the body of an ice breaker is to be built with high performance thick steel plate which is strong enough to endure minus 60 to 70 degrees Celsius.[352] Weld zones should also be able to endure the same external environment, which will lead to the development of construction technology (KORDI, 2000). Likewise, development of special paint and advanced construction technology are required to minimise the damage done to the body part that often bumps against the ice.[353] Besides, an ice breaker is expected to be equipped with a cruise level of cabin so that professional researchers can carry out their tasks with no inconveniences during their long journey.[354] In an effort to prevent an additional increase of the price, the quality of domestic interior materials must be improved. Lastly, the construction of ice breaking vessels may have a ripple effect on winning a contract for the construction of steel buildings and offshore plants in the Polar Regions.[355]

[350] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[351] Phone Interview with Lee Chanu, Captain of Ship Operation Team, KOPRI, August 25, 2010.
[352] http://www.kopri.re.kr/infra/araon/araon_about/araon_about_icebreaker/araon_about_icebreaker.cms.
[353] Phone Interview with Lee Chanu, Captain of Ship Operation Team, KOPRI, August 25, 2010.
[354] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[355] Ibid.

5.0 The Role of Antarctica in the South Korea's Domestic Politics

There have been seven different Korean governments since ROK first entered into Antarctica. Although the key note of the Korean polar policy has remained unchanged, the political colour of each administration has been reflected in its polar policy, intertwined with its internal and external social and political circumstances. The ROK's Antarctic enterprise has been politicised in the domestic politics in order to strengthen the position of each government or has served a keynote policy of each government as a supplement. This chapter will review how the polar policy of South Korea has been influenced and shaped by the seven different governments.

(1) Park Chung-hee Administration and Antarctica

Park was elected to be the fifth president of South Korea in 1963, supported by the rural population. As he seized power, two top priorities of his government were antipoverty and anticommunism. His national vision was the unification of the South and North through modernisation of ROK. He believed the only way to modernise the South was through economic independence which, therefore, is the first step to unification. With the goal of saving the backward nation by securing the development dictatorship through modernisation, the government promoted a national reconstruction campaign. During his presidency, President Park established the nation's economic infrastructure through the construction of the Seoul-Busan Highway, 'the Export Increase Policy', 'the Income Increase Policy', 'the Saving Promotion Policy', 'the Food Self-sufficiency Policy' and 'Saemaeul Movement' (the new community movement). The economic infrastructure led to the rapid development of the Korean economy which had been desolated by the Japanese colonial rule and the Korean War, and to the modernisation of the nation.[356]

Although the United States played the most integral part in ROK's fighting against poverty and communism, President Park had formed an uncomfortable relationship with the US since the early period of his presidency. He was suspected of being a communist and criticised by the US administrations for his abusing the human rights of the Koreans. Such uncomfortable

[356] Oh Won-chul, *박정희는 어떻게 경제강국 만들었나 (How did Park build a strong economy?)*, (Seoul: Dongsuhmoonhwasa, 2006), pp.46-52.

relationships often caused diplomatic friction between the two nations and affected the deep sea fishery of South Korea in the northern oceans. In the middle of the 1960s, legal restrictions on fishing in the northern oceans were raised by the coastal nations including the United States and the Soviet Union. Nevertheless, South Korea expected its deep sea fishery to continue growing as long as it could secure US support and approval of the fishery as part of its economic independence effort as the Soviet Union backed North Korea in the fishery.[357] At that time, South Korea was ranked third in deep-sea fish catch and exports, following Japan and the Soviet Union.[358] Despite the significance of the deep sea fishery to the Korean economy, however, stricter restrictions were imposed on South Korean vessels fishing in the northern oceans by the US as well as the Soviet Union. Therefore, Seoul began turning its attention to the Antarctic Ocean.

The Korean media became interested in reporting about the economic potential of Antarctica in the early 1970s. They explained about the abundant resources of Antarctica, the current state of other nations' Antarctic development and potential for conflict in the region. With the increasing public interest in Antarctica, the government introduced four Antarctic penguins to the National Zoo.[359] However, the Park administration was not interested in making a long-term investment in Antarctic development, but only in Antarctic fisheries by which it could deal with its immediate poverty. Particularly from the late 1960s, the worsened relationship between the Park administration and its US counterpart due to the US arbitrary decision to reduce the US troops stationed in Korea[360] and President Park's secret plan for nuclear development[361] resulted in President Park's pursuing independent security and economic policy. His effort to develop Antarctic fisheries became accelerated as the Soviet Union declared its economic zone in the northern oceans.[362] In response to the declaration of the economic zone, Seoul began its diplomatic effort to gain support from Australia and New

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[357] Ji Chul-gun, Chairman of the Korean-Japanese Fishery Committee, "업역어업과 국제적 문제," ("Pelagic fishery and international issues,") *Dong-A Daily*, September 13, 1966..

[358] "새 어장 찾아나선 원양어업," ("The fishing industry looking for new fisheries,") *Dong-A Daily*, August 19, 1981.

[359] "창경원에 남극의 새 가족펭귄 두 쌍 도입" ("Two couples of Antarctic penguin introduced to Chankyungwon,") *Kyunghyang*, March 29, 1974.

[360] "실록 박정희시대(30), 자위에서 자주로," ("The annals of the Park's time, from self-defence to self-reliant defence,") *Jungang Daily*, November 2, 1997.

[361] Kim Dal-jung, *Korea's Diplomacy*, (Seoul: Orum, 1998), p.58.

[362] "소에 북양어업한국측 입장전달," ("Advising the Soviet Union about the Korean position on the north-sea fisheries,") *Dong-A Daily*, December 27, 1976.

Zealand to enter into Antarctic fisheries,[363] and at the same time, Shin Taeyung, the Commissioner of the Fishery Agency, convened a council of the deep-sea fishery to discuss fishing in the Arctic Ocean.[364]

It became necessary for Seoul to begin developing Antarctic fisheries in earnest when a Korean commercial fishing boat was forced to return in the northern oceans by the Soviet Union.[365] The Park administration perceived it as necessary to join the Antarctic Treaty in order to develop continental and marine resources of Antarctica, and submitted a letter of intent to the member nations of the Treaty.[366] The government authorities clearly announced that its motive to join the Antarctic Treaty was to explore and develop Antarctic mineral and marine resources.[367] Right before President Park succeeded in becoming the ninth president of South Korea through an indirect election for his fifth consecutive term, the Korean government's effort to join the Antarctic treaty reached its peak. Korea's two television stations aired documentary films on Antarctic ecosystems and Antarctic exploration, while Ju Hongjang, the Deputy Head of the Fishery Agency, attended the 12th conference of the Food and Agriculture Organisation of the United Nations (FAO) to discuss the preservation and development of Antarctic bio resources.[368] On 7 December 1978, 20 days before President Park was elected, the commissioner of the Fishery Agency launched a research vessel to the Antarctic Ocean to investigate the amount of krill catch, and economic feasibility, stating *"entering into Antarctica is a government major enterprise to provide the people with high quality protein"*.[369] Likewise, on the same day, President Park attended a photo exhibition of Arctic exploration, appealing to the people's nationalistic sentiment that *"exploration of remote areas is the way we can show our national strength…I want to see the national traits*

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[363] "정부 제 3 국 통해 회신대기 '북양 계속 조업 희망' 소에 한국입장 전달," ("The government advising the Soviet Union about its position on the north-sea fisheries and waiting for a reply through a third party,") *Kyunghyang*, December 27, 1976.
[364] "수산청 새 어장 개척 논의, 원양어업대책회의 개최," ("The Fishery Agency discussing about developing new fisheries and convening a council of the deep-sea fishery,") *Mail Kyungje*, December 28, 1976.
[365]"통한의 회항 북양선단, 김송웅 선장을 만났더니," ("A bitter return of *Bookyangsundan*,Interview with Captain Kim Song-woong,") *Kyunghyang*, March 5, 1977.
[366]"자원개발 참여하게 남극조약 가입추진, 정부 비공산 회원국에 희망각서," ("The government attempts to join the Antarctic Treaty for resources development, submitting a letter of intent to the non-communist member nations,") *Kyunghyang*, March 11, 1978.
[367] "남극조약 가입추진," ("The attempt to join the Antarctic Treaty,") *Dong-A Daily*, March 11, 1978.
[368] "주 수산청 차장 향이 수산위 참석," ("Ju Hongjang, the Deputy Head of the Fishery Agency attending the FAO,") *Mail Kyungje*, June 9, 1978.
[369]"남극새우 어장 조사선 출항," ("A research vessel launched to the Antarctic Ocean to investigate the krill fishery,") *Mail Kyungje*, December 7, 1978.

of the persevering Korean through polar exploration".[370] When he mentioned "*the national traits of the persevering Korean",* his focus was not on polar exploration. He urged the people to persevere with their sacrifice for his development dictatorship to continue on. More specifically, he attempted to secure a justification for his fifth consecutive term by relating the national traits with the government's polar activity. At that time President Park was surrounded by enemies on all sides, being called 'dictator', 'communist' and 'pro-Japanese' by South Koreans, the US and North Korea respectively.[371] It seems that Antarctica was a way-out for him.

President Park's politicisation of the Antarctic fishery enterprise was revealed through the conflicting political wills shown by the Korean government right before and after President Park's death. The government funded about US$150,000 for the launch of the first deep-sea fishing vessel, called *Nambookho,* to the Antarctic Ocean.[372] Along with this launch, the Fishery Agency planned to build 217 large vessels in preparation for the future deep-sea fisheries.[373] After the successful return of *Nambookho*, the Fishery Agency announced the outcomes of the first test-operation for Antarctic krill and its plan to commercialise the Antarctic krill catch.[374] On 26 October 1979, however, President Park was assassinated by the director of the Central Intelligence Agency. In that year, the second voyage of *Nambookho* to the Antarctic Ocean was cancelled by the Fishery Agency by reason of insufficient government subsidies.[375] The cancellation of the second test-operation for Antarctic krill was again announced by the Fishery Agency on 12 April 1980.[376] The Fishery Agency attributed the suspension of the test-operation to budget shortages.

Triggered by the need to protect the deep-sea fishery rights as part of the economic independence effort of South Korea and promoted by President Park for his regime security,

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[370]"박대통령 큰영애 아주 보도 사진전 탐험장비전 참관," ("President Park attended a photo exhibition of Arctic exploration,") *Kyunghyang*, December 7, 1978.
[371] Park Gab-dong, *North Korea, Evil Nation*, (Seoul: Seoul Choolpansa, 1997), pp.253~254.
[372] "남빙양 향한 만선 꿈, 수산한국 새 장 여는 남북호," ("Dreaming of returning with a full load of fish, *Nambookho* opens Korea's new fisheries,") *Dong-A Daily*, December 8, 1978.
[373]"내년에 대형어선 217 척 건조, 수산청," ("The Fishery Agency builds 217 large vessels next year,') *Mail Kyungje*, December 19, 1978.
[374] "5 년간 시험조업, 수산청 남극새우 기업화추진," ("Five years test operation, the Fishery Agency attempts to commercialise Antarctic krill,") *Mail Kyungje*, March 15, 1979.
[375] "남극수산 올겨울 남극출어 계획좌절," ("The test operation of Namkuksusan in the Antarctic Ocean is cancelled ,") *Mail Kyungje*, November 20, 1979.
[376] "적자 뻔해 요지부동," ("No profit, no operation,") *Kyunghyang*, April 12, 1980.

the ROK's entry into Antarctica was suspended until the 11th president of Korea, General Jun, took office.

(2) Jun Du-hwan Administration and Antarctica

Being the Security Commander of the Korean Armed Forces between 1979 and 1980, General Jun extended the emergency martial law across the nation and dispersed the National Assembly to ease the instability of the internal situation and to seize power.[377] To offer resistance to the military coup around 200,000 university students staged a protest demonstration in the Seoul Square between 1 and 15 May 1980. On 18 May in the same year, *Shingunbu* (new military faction) proclaimed the Martial Law No.10 that banned political activities, opened universities by force and censored media.[378] On the same day university students in Gwangju City initiated a prodemocracy uprising known as 5.18 movement. This uprising was crushed by the martial law armed forces and airborne troops dispatched by *Shingunbu*. On 21 May, angry Gwangju citizens joined the protest demonstration and drove the martial law armed forces out of the city. On 27 May, however, *Shingunbu* subjugated the demonstration through the bloody suppression, called 'Sangmuchungjungjakjun'.[379] The bloody suppression and heavy casualties during the 5.18 prodemocracy movement brought about an upsurge of anti-Jun sentiment among student activists and many citizens.[380]

However, despite this sentiment, on 29 August 1980 General Jun became the 11th president of ROK without a competitor through an indirect election, and was elected the 12th president on 25 February 1981. The top priority of the Jun administration was to successfully deal with the questions of the government's legitimacy raised from both inside and outside Korea. In order to settle the popular sentiment agitated in the process of seizing power and suppressing by force the people's longing for a democratised Korea and to distract the people's political desire, the Jun administration adopted the so-called '3S (Sex, Screen, Sports) policy'.[381]

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[377] "5.18 사건 재수사 종결,내일 기소," ("The end of the reinvestigation on the 5.18 incident, tomorrow under indictment,") *Chosun Daily*, January 22, 1996.
[378] Lee Sang-shik, "The Historical Background of the 5.18 Prodemocracy Movement," *Hyangto Moonhwa Gaebal Hyupuihoi, Hyangto Moonhwa* Vol.22, , 2002, pp.7-15.
[379] Gwagusa Jinsangkyumyung Wiwonhoi, *A Report on 12/12, 5/17, 5/18 Incidents*, (Seoul: Ministry of National Defence, 2007), pp.120-122.
[380] Ibid. pp.123-130.
[381] Son Jung-mok, "Jun Government's 3s Policy," *Public Officials Benefit Assosiation, Doshi Moonje* Vol.39, No.423, 2004, pp.103~105.

The Jun administration founded professional baseball and soccer, launched colour TV broadcasts, and relaxed the censorship of sexual expression in films and drama. Moreover, President Jun accepted the proposal of Sejima Ryujo, one of the most influential right-wing Japanese politicians, to do his best to make Korea the host nation of the 1986 Asian Games and 1988 Olympic Games.[382] In 1984 a newspaper editorial expressed its concern that the government had hypnotised the public through the 3S policy, creating a festive mood.[383]

Unlike the Park government which had continued its nuclear development despite strong opposition from the US, the Jun government with lack of legitimacy and weak foundation of the regime, promised President Reagan to give up its nuclear programme,[384] expecting the US support and approval of the regime's legitimacy in return. With ceaseless domestic protests and external criticisms against the government, President Jun's choice was to show both domestic and foreign observers what the government was capable of outside Korea in terms of its diplomatic strength. The government's diplomatic effort- whether it was to host the two international sports events, to realise a reunion of separate families and exchange visits of performers between the South and North for the first time, or to join the Antarctic Treaty- could never be criticised even by extreme anti-Jun activists, for those achievements would appeal to the nationalistic sentiment of the Koreans, regardless of the public opinions on the current government.

From the beginning, President Jun's Antarctic policy was focused on joining the Antarctic Treaty, rather than on pursuing economic or scientific effect, in order to show South Korea's increased national strength to both internal and external observers. The first step to join the Treaty was to resume its Antarctic fishery enterprise which had been suspended since its first test-operation in late 1978. According to the Fishery Agency, in those days a nation which wanted to join the Treaty was required by the Antarctic Treaty System to perform its test-operation in the Antarctic Ocean three times.[385] In order to have the resumption of the test-

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[382] Han Sang-bum, President of Presidential Truth Commission on Suspicious Deaths. "박정희-전두환-노태우는 일본 우익 거두 세지마의 충복들" ("Park Chunghee, Jun Du-hwan and Roh Tae-woo were loyal servants to Sejima Ryujo,") *Daily Surprise*, December 12, 2005.
[383] "홍보의 불균형," ("The imbalance of public relations,") *Dong-A Daily*, May 24, 1984.
[384] "80 년대초 국내서 플루토늄 추출," (Korea extracts plutonium in the early 80s,") *Hangyurye*, September 9, 2004.
[385] "707 대호호 남빙양 새우 2 차 조업성공," ("707 *Daehoho* succeeded in catching Antarctic krills for the second time,") *Kyunghyang*, March 10, 1982.

operation in the Antarctic Ocean proceed smoothly, Kim Jongsoo, the deputy head of the Fishery Agency, prepared for fisheries agreements with Brazil, Chile and Surinam.[386] As a matter of fact, deep-sea fishery was not of great importance to the Korean economy at that time. Since 1976, when coastal nations declared their Exclusive Economic Zone (EEZ), the catch of Korean deep-sea fishing vessels had been rapidly reduced.[387] Nevertheless, the Fishery Agency launched a vessel to the Antarctic Ocean for its second test-operation for Antarctic krill a year after President Jun took office with an objective of securing its vested rights in joining the Antarctic Treaty.[388]

The Ministry of Foreign Affairs had also made its diplomatic effort to join the Antarctic Treaty with its ultimate objective of flaunting the nation's power. Its first diplomatic effort to express the interest of the Jun administration in Antarctic affairs was shown in the International Maritime Law Workshop held in Seoul on 6 July 1981, where participants discussed the Antarctic resources monopolised by seven member nations of the Treaty such as the United States, the Soviet Union, the United Kingdom and Japan.[389] At a question session of the National Assembly in 1983 Lee Bumseok, the Minister of Foreign Affairs, answered the question about the government's willingness to join the Antarctic Treaty that *"it is hard to join the treaty due to the opposition of the Soviet Union*[390]*...however, we will pursue it with a strong will..."*.[391] In 1984, the Ministry of Foreign Affairs stated that it had submitted a letter of application to Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and made its diplomatic effort to win votes, regarding the membership of CCAMLR as a prior stage to joining the Antarctic Treaty.[392]

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[386] "브라질,수리남, 칠레 3 국과 어업협정 곧 체결," ("The government is about to sign a fisheries agreement with Brazil, Chile and Surinam,") *Dong-A Daily*, May 20, 1981.
[387] "새 어장 찾아나선 원양어업," ("The deep-sea fishing industry is looking for new fisheries,") *Dong-A Daily*, August 19, 1981.
[388] "남빙양의 황금을 낚는다," ("Fishing for gold in the Antarctic Ocean,") *Dong-A Daily*, November 28, 1981.
[389] "서울서 열린 국제해양법 워크샵, 해양 새 질서를 찾는다," ("The Seoul Workshop for the international maritime law is shaping a new maritime order,") *Kyunghyang*, July 6, 1981.
[390] "태평양회담 실무작업추진, 대한해협 봉쇄대책 있나 질의," ("The Pacific Meeting being promoted at a working level, A question raised on ways to block the Straits of Korea,") *Mail Kyungje*, April 27, 1983.
[391] "법사,외무,내무,재무위 질의답변 요지 '삼보사건 권력과 관계없다'," ("The Legislation-Judiciary Committee, the Foreign Affairs Committee, the Home Affairs Committee and the financial affairs Committee summarised that the Sambo scandal has nothing to do with political influence,") *Dong-A Daily*, April 27, 1983.
[392] "남극자원 보존협약가입신청서 제출," ("A letter of application submitted to Convention on the Conservation of Antarctic Marine Living Resources,") *Mail Kyungje*, March 6, 1984.

In order to overcome the difficulty of gaining support from the communist member nations in an attempt to join the Antarctic Treaty and maximise the promotion of the government's Antarctic policy among the public, the Jun administration came up with a non-governmental diplomatic activity. The Ministry of Foreign Affairs planned the first Antarctic exploration in 1984[393] and organised an Antarctic expedition comprised of 16 members of the Sea Explorers of Korea.[394] The most noteworthy part of this exploration was that the expedition was divided into two groups. One group was designed to conduct people to people diplomacy by visiting seven foreign stations, while the other was to flaunt the indomitable spirit of the Koreans by placing a Korean national flag on top of Vinson Massif, the highest peak in the Antarctic Continent so as to arouse a united strong nationalistic sentiment among the Korean public.[395] The task given to Yun Seoksoon, the captain of the expedition, was to win friendly support not only from allied nations such as the US, Chile and Argentina, but also from Communist nations such as Poland and China so that South Korea could join the Antarctic Treaty based on the firm non-governmental relations with them.[396]

The government continued its effort to popularise its Antarctic policy. President Jun invited the first Antarctic expedition to Chungwadae, the presidential residence of Korea, for a luncheon.[397] It also held a photo exhibition on Antarctic exploration. Interestingly, this exhibition was held in one of the most crowded department stores,[398] instead of an ordinary gallery which ordinary citizens of Korea hardly visited at that time. On 27 November 1986, South Korea became the 33rd member of the Antarctic Treaty System. An official of the Ministry of Foreign Affairs made a statement on the success in joining the Treaty that *"it will bring a symbolic effect on Korea's international status…"*.[399] Considering what the official pointed out, the Jun administration did not seem to keep its economic or scientific interests at heart in pursuing the entry into the Antarctic Treaty System. Instead, it had approached Antarctica with a short-term goal of flaunting its capability to those who doubted the

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393 "11 월 16 일 출발예정 우리나라 척 남극탐사," (" Korea's first Antarctic expedition is scheduled for the 16th of November,") *Dong-A Daily*, March 7, 1984.
394 "한국탐험대 남극을 간다," ("The Korean expedition goes to Antarctica,") *Dong-A Daily*, July 19, 1985.
395 Interview with Hong Seokha, Leader of the Antarctic Expedition, "남극은 무한한 가능성의 대륙," ("Antarctica, the continent of limitless potential,") *Kyunghyang*, August 22, 1985.
396 Interview with Yun Seoksoon, Captain of the Antarctic Expedition, "남극 상설기지설치 급해요," ("It is urgent to build a permanent base in Antarctica,") *Dong-A Daily*, December 18, 1985.
397 "남극탐험대원 초치," ("The members of the Antarctic expedition invited to Chungwadae ,") *Dong-A Daily*, December 20, 1985.
398 "단신," ("Short articles,") *Mail Kyungje*, March 5, 1986.
399 "미래의 자원기지 확보," ("Securing a future resources base,") *Kyunghyang*, December 3, 1986.

legitimacy of the regime, by joining the Treaty at any cost. After joining the Treaty, the Jun Administration decided to stop assisting in sending a fishing vessel to the Antarctic Ocean.[400] The Korean government had continued dispatching fishing vessels to the Antarctic Ocean six times from 1978 to the year that it succeeded in joining the Treaty despite the successive annual deficit.[401] Instead of trying to find a solution to the deficit of the Korean Antarctic fishery, Jun administration stayed focused on popularising its achievement in Antarctica, issuing three million memorial stamps to commemorate Korea's official entry to Antarctica.[402]

Towards the end of the presidency, President Jun attempted to make his appointed successor, Roh Tae-woo, the 13th president of Korea. On 13 April 1987, President Jun made the "4.13 statement that the 13th president of Korea would be selected through an indirect election and the successor would take office in February 1988.[403] The 4.13 statement met with strong opposition from the people. The so-called 'June Pro-democratic Resistance Movement' demanding a direct presidential election system spread across the nation.[404] As part of the government's effort to tackle the antigovernment demonstration, on 14 May in the same year Lee Taeseop, the Minister of Science and Technology, announced in haste that a Korean Antarctic station would be constructed on King George Island.[405] However, the reason King George Island was chosen as the location of Korea's first polar science station was far from a long-term perspective. The Ministry of Science and Technology explained that as King George Island was close to Argentina, it would be easy to transport construction materials and equipment, and to gain drinking water.[406] From that time some voices among the public started to be raised against the government's big science projects such as space development and the construction of an Antarctic station.[407] In response to such negative views on the construction of the station in Antarctica, the Jun administration began a more active promotion on the historic meaning of building Korea's own permanent science station in

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400 "남빙양 크릴잡이 중단위기," ("The krill catch in the Antarctic Ocean is going to stop,") *Mail Kyungje*, October 13, 1987.
401 Ibid.
402 "남극진출 기념우표," ("The memorial stamps for entering into Antarctica,") *Kyunghyang*, November 27, 1987.
403 Ji Byung-moon, *New recognition of modern Korean politics*, (Seoul: Parkyungsa, 2001), pp.370~380.
404 Han Heung-soo, *The dynamics of Korean politics*, (Seoul: Orum, 1996), p.312.
405"남극기지 내년 2 월 건설," ("The Antarctic base is scheduled to be completed next February,") *Dong-A Daily*, May 14, 1987.
406 "한국 남극기지 빨리세워야," ("It is urgent to build an Antarctic base,") *Kyunghyang*, February 13, 1987.
407 "거대과학과 국민합의," ("Big science and public consensus,") *Kyunghyang*, May 22, 1987.

Antarctica through five special documentary films, produced by the two Korean television stations, about Antarctic bases of other nations and the processes of the Korean base construction.[408]

In contrast to its long emphasis on the importance of building a Korean Antarctic base, the Jun administration sent no high-ranking officials to attend the Antarctic base groundbreaking ceremony.[409] Being criticised for its lack of interest in the base, the Ministry of Science and Technology started to worry about who should attend the building completion ceremony in late February 1988 when the government would change. It was almost impossible for the president or the Minister of Science and Technology to go on a trip to Antarctica during the period of government transfer. However, it was not appropriate to send lower-ranking officials than a ministerial calibre to a building dedication ceremony according to the custom of foreign building completion ceremonies in Antarctica.[410]

With a lot of criticisms from both inside and outside Korea, the Jun administration adopted every possible means to show what the government is capable of in terms of its diplomatic strength as a legitimate administration. Before his retirement, on 17 February 1988 President Jun called the King Sejong Station and said *"the construction of the King Sejong Station is a symbol of Korea's increased national strength"*.[411] To President Jun, Antarctica was one of the symbolic means of justifying the illegitimacy of his government and transferring his government to his chosen successor, President Roh Tae-woo, by emphasising his capability of increasing national power by prioritising it over everything else. Thanks to the Jun government's effort to justify its legitimacy through the Antarctic policy, the ROK was able to join the Antarctic Treaty and construct its first Antarctic station.

(3) Roh Tae-woo's *Nordpolitik* and Antarctica

President Roh came to power in the period of the cessation of the Cold War. In the course of managing the post-war, the United States was seeking to increase its national security, reduce

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[408] "남극특집 5 편 제작 양 TV," ("The two Korean television stations produce five special documentary films on Antarctica,") *Dong-A Daily*, October 1, 1987.
[409] "고위관리 남극안가," ("No high-ranking officials go to Antarctica,") *Kyunghyang*, January 8, 1988.
[410] Ibid.
[411] "전 대통령 남극기지와 첫 통화," ("President Jun made the first phone call to the Antarctic Station,") *Kyunghyang*, February 17, 1988.

its financial burden, and gradually de-communise the Soviet Union and China. During the process of de-communisation, the Soviet Union and China, to some extent, felt it necessary to gain economic support from South Korea and attempted to increase their political influence on the Korean Peninsula by establishing diplomatic ties with the ROK. In particular, Beijing was seeking to take the advantageous position in rivalry with Taiwan through the establishment of diplomatic relations with Seoul.[412] During the Cold War, ROK's foreign policy, and particularly its policy on Pyongyang, was determined by the rivalry between the United States and the Communist bloc. Sensing structural changes in the world power distribution, the Roh administration attempted to seize the momentum to initiate its independent policy on North Korea, announcing the 7.7 Declaration in 1988.

The 7.7 Declaration[413] suggested six policies on the Communist bloc and North Korea. First, the South and North should promote cultural exchange and allow overseas Koreans to visit. Second, separated families should be informed of whether their family members are alive and allowed to exchange letters. Third, the South and North should form a trading relationship. Fourth, the South would not be opposed to the exchange of non-military supplies between ROK's allies and North Korea. Fifth, the South and North should reject consuming competition and diplomacy to defeat each other, and pursue mutual cooperation. Sixth, the South and North should support each other to improve relationships with each other's allies. According to Kim Sung-chul,[414] the official and explicit aim of President Roh's *Nordpolitik* was to approach North Korea or unification by detouring towards the Communist bloc. The *Nordpolitik* was groping for a peaceful unification of the South and North by improving the relationships with China and the Soviet Union, acknowledging the existence of Pyongyang to reject the consuming conflict, and helping North Korea develop. The unofficial and implicit aim of the *Nordpolitik*, on the other hand, was to besiege and press on the North through the diplomatic ties with the Soviet Union, China and the East-European bloc. It was a policy of befriending distant states and of antagonising neighbours through which the Roh administration attempted to separate and isolate Pyongyang from its allies. It was a roundabout policy rather than a blockade policy. However, President Roh's *Nordpolitik* was

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412 Jun Jae-sung, *A study on the determinant factor of Roh Tae-woo government's Nordpolitik and its changes*, (Seoul: Seoul National University, 2003), p.32.

413 Government Information Agency, *The Sixth Republic of Korea (2),*Seoul, 1992, pp.87-125.

414 Kim Sung-chul, "Dynamics of diplomacy in environment, system and effect: *Nordpolitik* ," *The Korean Association of International Studies, Kookje Jungchi Nonchong* Vol.4, No.3, 2000, pp.81-99.

designed at least to subordinate the North to the South in the official name of 'Open the North'.

Feeling confident in the South's superiority to the North in terms of national strength and international status at that time, the Roh administration earnestly promoted the *Nordpolitik* in both political and non-political arenas. Unlike the 1984 Los Angeles Olympic Games boycotted by the Soviet Union, almost every nation from Eastern and Western blocs participated in the 1988 Seoul Olympic Games, thanks to the 7.7 Declaration proclaimed two months before the Olympic Games. Besides sports events, the exchange of science and technology, including Antarctic research, was used as a tool by which President Roh's *Nordpolitik* was conducted. On 10 April 1988 South Korean scientists were sent to a conference held by Greenpeace, an environmental movement organisation, to discuss Antarctic environmental protection with their counterparts from China, the Soviet Union and East Germany.[415] The Ministry of Science and Technology announced its plans to promote in earnest the exchange of science and technology with the Communist bloc. As part of the policy, the Ministry arranged for the Korea Ocean Research & Development Institute (KORDI) to conduct a joint investigation on marine resources in Northeast Asia with the Soviet Union, China and North Korea. It also planned to have King Sejong station used by both the South and North.[416] On 12 June 1990 the Roh administration signed an agreement with the Soviet Union on Antarctic research cooperation. This agreement was inclusive of the mutual exchange of information, joint research, exchange of experts and joint transportation of supplies.[417] At last, on 30 September 1990, President Roh's *Nordpolitik* produced a tangible fruit, which was an establishment of diplomatic ties with the Soviet Union.

Feeling more convinced of its absolute superiority to Pyongyang in economic and diplomatic power, the Roh administration attempted to keep the North, which was being isolated from its allies, more dependent on the South, while it continued its effort to have China on its side. On 27 February 1990, the Roh government approved of contact between South and North Korean

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[415] "남극환경 보호논의, 한, 중공, 소, 동독 등," ("Korea, China, the Soviet Union and East Germany discuss the Antarctic environmental preservation,") *Mail Kyungje*, April 12, 1988.
[416] "과학계 대 공산권 교류 활발추진," ("The Science circle actively cooperates with the communist blocs,") *Kyunghyang*, January 13, 1989.
[417] "남극연구 상호협력 한소 합의각서 교환," ("An agreement on Antarctic research cooperation between Korea and the Soviet Union,") *Dong-A Daily*, July 16, 1990.

researchers in Antarctica.[418] On 28 January 1991, the Ministry of Science and Technology reported to President Roh on its northward diplomacy plan of science and technology. With the plan, the Ministry of Science and Technology was promoting the South/North cooperative enterprises for joint Antarctic investigation, and groping for agreements to cooperate on science and technology between the South Korean and Chinese governments.[419] On 30 January 1991, the Roh government announced that it would actively promote the exchange of science and technology between the two Koreas especially in feasible areas, such as joint research at King Sejong Station, with an objective of mutual cooperation and restoration of the homogeneity of the two peoples. It stated more specifically that in the upcoming inter-Korean ministerial talks would discuss the South/North joint research at King Sejong Station, construction of additional buildings within King Sejong Station for a station of North Korea, and joint entry to the Antarctic Continent.[420]

The first "Korean People's Science and Technology Symposium" was scheduled to take place in Yungil City, China on 19 August 1991 to discuss ways of cooperating to develop science and technology, including Antarctic research, inviting about 300 people concerned from South Korea, North Korea and China. The second and third symposia were agreed to be held in Pyongyang in 1992 and in Seoul in 1993 respectively.[421] On the day of the first symposium, the Ministry of Science and Technology of South Korea attempted to make a government-level contact with the Committee of Science and Technology of North Korea.[422] Despite the academic nature of the symposium, the Roh government applied political pressure to the North, and one of the inducements was the Antarctic card. North Korea, however, refused to accept the government-level contact.[423]

President Roh's Antarctic policy served as a non-political tool to establish diplomatic ties with the Soviet Union and China, and to indirectly put North Korea under pressure to open up.

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[418] "남극원정 남북대원 정부 접촉승인," ("The government permits the contact between South and North Korean researchers in Antarctica,") *Kyunghyang*, March 1, 1990.
[419] "과기처 보고개발사업 파격적 특혜," ("The Ministry of Science and Technology reporting exceptional favour for the development enterprises,') *Dong-A Daily*, January 28, 1991.
[420] "남북 과기교류 적극 추진," ("The South and North actively cooperates in the field of science and technology,") *Mail Kyungje*, January 30, 1991.
[421]"기대큰 한민족 과기 협력," ("High expectations on the cooperation of the two Koreas in the field of science and technology,") *Mail Kyungje*, June 12, 1991.
[422] "남북 과학자들 첫 토론장," ("The first discussion between South and North Korean scientists,") *Mail Kyungje*, August 20, 1991.
[423] Ibid.

On 24 August 1992, the Roh administration succeeded in establishing diplomatic ties with China.[424] Being isolated from its old allies by the *Nordpolitik* of the Roh administration, Kim Il-sung officially expressed his intention to open North Korea in 1992. In 1994, he was scheduled to have a summit meeting with President Jimmy Carter and President Kim Yung-sam, the successor of President Roh, to discuss nuclear issues. However, on 8 July Kim Il-sung died of myocardial infarction.[425]

The Economic Planning Board (EPB) reported its evaluations on the government major investment businesses on 19 October 1988.[426] The evaluations pointed out that the construction of King Sejong Station had some validity, but the scale of the Antarctic business should be reduced. To the Roh administration, however, Antarctica was not of economic value. The Antarctic enterprise was one of the important cards it could play in the beginning of the post Cold War era in order to improve relationships with North Korea's allies, subordinate the North to the South and increase the dependence of Pyongyang upon Seoul. As the post Cold War era changed, ROK's Antarctic policy evolved along with it.

(4) Kim Yung-sam's *Segyehwa* and Antarctica

From late 1994, the South Korean society became obsessed with a word, *"segyehwa"*. The closest English word to *"segyehwa"* is "globalisation". Kim Yung-sam, the 14th president of Korea, first mentioned his idea of *segyehwa* at a press conference in Sydney during his visit to Australia on 17 November 1994.[427] After his return to Korea, he convened an extraordinary Cabinet council to give shape to the *segyehwa* plan on 22 November 1994. President Kim chaired the council, called '*Segyehwa* Cabinet Council', and explained the necessity to push forward *segyehwa*.[428] *"the world is rapidly changing along with the rise of the European Union, the effectivation of the North American Free Trade Agreements, the solidarity of the Asia-Pacific Economic Cooperation and the establishment of the World*

[424] "한중수교와 양국 경제," ("The establishment of diplomatic ties between Korea and China, and their economy,") *Mail Kyungje*, August 24, 1992.
[425] "김일성 사망," ("Kim Il-sung died,") *Dong-A Daily*, 1994-07-10.
[426] "정부 사업계획 타당성 없어," ("Lack of validity in the government enterprises,") *Mail Kyungje*, October 19, 1988.
[427] "세계화는 제도 개혁 부터," ("*Segyehwa* starts from a systemic reform,") *Kyunghyang*, November 18, 1994.
[428] "세계화 구체방안 교통정리," ("Concrete plans for *Segyehwa* ,") *Kyunghyang*, November 23, 1994.

Trade Organisation… segyehwa is a strategy to survive the harsh international society of fierce competition" stated President Kim in the council.[429] On 21 January 1995, he launched the Committee of *Segyehwa* and made an official announcement on his more concrete *segyehwa* plans on 25 January 1995.[430] The Committee of *Segyehwa* declared 'Visions and Strategies of *Segyehwa',* and established 53 reformation plans on the *segyehwa* promotion.[431]

Segyehwa with its ultimate aim to be the centre of the world became the norm of the Korean society in every sector. Whether it was for economic growth, for stable politics, for human rights or for the educational system, *segyehwa* was always at the centre of the issue. The Antarctic policy of South Korea was not an exception. Among many agendas concerning *segyehwa* were improving the national image, increasing the national influence in world organisations and being an exemplary nation for environmental preservation in order to cope with bilateral pressures exerted by the US, Japan and the EU to discipline South Korea's free-riding and spoiling behaviour, and with multilateral pressures for economic liberalisation in South Korea provided by ratification of the Uruguay Round, the launching of the WTO and admission to the OECD.[432] During the '*Segyehwa* Cabinet Council' on 22 November 1994, Oh Inhwan, the Minister of Public Information, explained the *segyehwa* promotion strategy by stating *"segyehwa diplomacy must go beyond 'nuclear diplomacy' and pursue a new diplomacy to enhance a practical diplomacy such as trade or culture by addressing environmental issues, uplifting global civic awareness among the people and changing the way of thinking"*.[433] As the Minister stated, the Kim administration adopted *segyehwa* as a long-term process that would transform the South Korean social economy from that of a developing country into a newly industrialising one.[434] In particular, President Kim emphasised the importance of exercising the nation's influence outside Korea, even if it

[429]"세계화 기구, 체제 지체없이 마련을," ("It is urgent to establish organisations and systems for *Segyehwa,") Kyunghyang*, November 23, 1994.
[430] "토론 끝내고 세계화 실천에 가속," ("No more discussion for *Segyehwa* , it's time to act,") *Kyunghyang*, January 26, 1995.
[431] Cabinet Office, 2003, http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=000845&pageFlag=.
[432] Ibid.
[433] "세계화 구체방안 교통정리," ("Concrete plans for *Segyehwa* ,") *Kyunghyang*, November 23, 1994.
[434] Kim Samuel.S., *The International Relations of Northeast Asia*, (Lanham: Rowman &Littlefield Publishers 2004), pp.264~265.

would not bring tangible results at once. He believed that in a globalised world a nation which cannot give its voice outward would never join the ranks of developed nations.[435]

As a country in the middle status of developing and developed nations, it was not easy for the ROK to take the initiative in shaping the world economic and political system. Instead, the Kim administration decided to address global issues through its environmental and Antarctic policy. The Kim government declared a plan, called 'The Environmental Vision of the 21st Century' with the core idea of changing Korea from 'a model nation for economic development to 'an exemplary nation for environmental preservation'.[436] Jung Jinseung, the Deputy Minister of Environment, stated *"this plan has been designed to improve the domestic environment and induce improvement of the world environment so that we can compete with advanced nations who have been raising trade barriers against us"*.[437] In those days, particularly, the eyes of the world were on the Antarctic environment due to the massive media report on the rapid reduction of the Antarctic ozone layer.

On 23 April 1994, it was decided to hold the 19th Antarctic Treaty Consultative Meeting (ATCM) in Seoul on 8 May 1995.[438] The Kim administration invited 16 non-consultative nations including North Korea and Cuba.[439] On the first day of the conference, Lee Kiju, the chairman of the Seoul ATCM, said in an interview with a Korean newspaper that *"this conference will be an opportunity (for Korea) to lead the operation of the Antarctic Treaty System"*.[440] Throughout the conference, the Kim government conveyed a strong message on the environmental protection of Antarctica to both the consultative and non-consultative parties. Kong Nomyung, the Minister of Foreign Affairs, stated in his opening speech that *"the Madrid Protocol should take effect right now to protect the Antarctic environment…the National Assembly of Korea is ratifying it now…the consultative parties should introduce a*

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[435] "21 세기 국정운영방향 제시," ("The policy direction in the 21st century,') *Kyunghyang*, November 18, 1994.
[436] "동남아 오염 막게 남북환경공동체 추진," ("Establishing an environmental community of South and North Korea to prevent pollution in Southeast Asia,") *Seoul Shinmoon*, June 3, 1995.
[437] Ibid.
[438] "남극조약당사국회의 내년 서울서 개최," ("ATCM is scheduled to be held in Seoul next year,") *Mail Kyungje*, April 23, 1994.
[439] "남극조약 당사국 5 월 서울서 회의," ("ATCM is scheduled to be held in Seoul in May,") *Dong-A Daily*, March 23, 1995.
[440] "인터뷰 서울 남극조약협의 당사국 회의 의장," ("Interview with the chairman of the Seoul ATCM,") *Mail Kyungje*, May 8, 1995.

compensation system for damages to effectively protect the Antarctic region…the Antarctic Treaty System should be tightened up".[441]

On 5 September 1996, Lee Junghwan, the Deputy Minister of Maritime Affairs and Fisheries, announced that the government would begin constructing the second Antarctic base in 2000 in order to reinforce the presence of Korea in the region.[442] At that time President Kim was touring several countries in Central and South America, signing trade and Antarctica cooperation agreements with relevant countries. During his visit to Chile, he talked on the phone to Kim Yedong, the research team leader at King Sejong Station. President Kim said *"Korea is one step closer to becoming the centre of the world thanks to your work…keep flaunting Korea's national prestige to the world community".*[443] The rest of the conversation is not known. According to his entourage, however, the reason why President Kim contacted the station in person was because he wanted to show to the world community his strong will to preserve Antarctic marine resources and environment.[444]

Seoul's Antarctic policy was shaped to enhance the idea of "*segyehwa"* promoted by the Kim Yung-sam administration. Under bilateral and multilateral pressure, South Korea had suffered from raised trade barriers against its rather closed economy. Realising the inevitability of limitless competition in the rapidly globalising world, the Kim administration adopted "*segyehwa"* as its survival strategy to be an influential nation in the world community. In particular, the Kim government noted the importance of a nation's ability to give its voice on global agendas. Witnessing many emerging nations, similar to the ROK, fail to join the ranks of developed nations because of their weak voice in the international arena, despite their rapid economic development, the Kim government's "*segyehwa"* took the initiative in addressing global environmental issues. In support of the "*segyehwa"* which focused on securing its presence in the world community by being a leading nation on global

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[441] "남극 비준서 조기기탁 공외무 남극회의 연설," ("Kong Nomyung, the Minister of Foreign Affairs, delivered his opening speech in the Seoul ATCM,") *Kyunghyang*, May 16, 1995.
[442] "남극 「제 2 과학기지」 만든다/연구-자원 선점위해 추진/해양부," ("The Ministry of Maritime Affairs and Fisheries building the second Antarctic base to preoccupy research and resources,") *Dong-A Daily*, September 6, 1996.
[443] "김 대통령 남극세종기지 김예동 대장과 통화," ("President Kim talked to Kim Ye-dong at the King Sejong Station on the phone,") *Seoul Shinmoon*, September 8, 1996.
[444] "한·칠레 남극 협력 확인/김 대통령,세종기지와 통화," ("Confirming Korea-Chile Antarctic cooperation, President Kim made a phone call to the King Sejong Station,") *Hankook Daily*, September 8, 1996.

environmental preservation, Seoul criticised the weak environmental regulations of the Antarctic Treaty System and urged the consultative members to follow its exemplary initiative in establishing a domestic Antarctic law.

The Kim government's long-term effort to increase its presence in the world community seemed to continue through the *segyehwa* Antarctic policy. As part of the long-term effort, on 15 January 1997, the Korea Ocean Research and Development Institute (KORDI) announced that it would draw a map of the Barton peninsula with Korean names on which King Sejong station was located and have the map officially approved by The United Nations Group of Experts on Geographical Names (UNGEGN).[445] However, *segyehwa*, which was a voluntary globalisation initiated by President Kim, became threatened by the Asian Economic Crisis in late 1997. As a result of the bail out from the IMF, with its imposition of conditionalities for macroeconomic stabilisation and structural reforms, the Korean society and Antarctic policy became faced with a forced globalisation.[446]

(5) Kim Dae-jung and Antarctica

The Kim Dae-jung administration was the first progressive government in Korean history. Due to the Asian Economic Crisis, Korea was faced with an unprecedented national bankruptcy when President Kim took office in February 1998. The top priority of the Kim administration was to repay the debt from the IMF as soon as possible by boosting its exports and tightening the government's budget in the areas which were not expected to produce immediate results beneficial to the Korean economy. In this vein, the Kim administration increased its investment in applied science such as the Heavy Chemical Industry and Information Technology, whereas pure science such as polar science was out of its sight.

Being interviewed by the *Kookmin Daily*, the researchers at King Sejong Station revealed their disappointment about the government's lack of interest in polar science. They complained about the insufficient budget allocation for the operation of the station and the absence of the ultimate aim of Korea's Antarctic activity. Kim Yedong, the head of the Polar

[445] "남극 봉우리에 '백두''한라'이름 붙인다/세종기지 자체지도 작성," ("Naming Antarctic mountaintops 'Hanla', 'Baekdoo'/ Making our own map,") *Moonhwa Daily*, January 15, 1997.
[446] Kim Samuel.S., *The International Relations of Northeast Asia*, (Lanham: Rowman &Littlefield Publishers 2004), p.265.

Research Centre in the Korea Ocean Research and Development Institute (KORDI) said *"the annual Antarctic Budget of US$ 3million is limiting our Antarctic activity…it is urgent to establish a special law to support the Antarctic activity"*.[447]

With the Kim administration emphasising only applied science, the KORDI had failed to secure a large amount of research funds to construct an Antarctic continental station and build an icebreaker.[448] On 23 May 2000, the KORDI held a seminar on "Antarctica and Science and Technology in the 21st Century" to push the decision-makers to take action for the construction of a second Antarctic base and building of an icebreaker.[449] On 19 June 2001, the KORDI held another seminar on "Antarctic Continental Station, and Polar Science and Technology", where they argued again about the necessity of building a second permanent base and an icebreaker.[450] From mid 1999, the Korean economy enjoyed a quick recovery from the economic crisis, thanks to the good economic performance of the US and EU who are the biggest markets for Korea's exports.[451] It was in 2001 that the Kim administration repaid the loan from the IMF in full. With the quick economic recovery, the Korea Aerospace Research Institute and the Korea Research Institute of Bioscience & Biotechnology as well as the KORDI spoke with one voice on the necessity to construct an Antarctic continental base.[452] Lee Sanghoon, the head of the Polar Research Centre in the KORDI said *"if it is hard to construct a new base (because of the tight national budget) right now, at least we should have an icebreaker"*.[453] After the economic recovery, however, the Kim government's priority was its policy on North Korea and not its Antarctic enterprise.

During Kim's term of office, the meaning of the Antarctic research at King Sejong Station was degraded to merely a small symbol to do with Korea. On 1 January 2000, Lee Hoichang, the leader of the Grand National Party, convened a New Year's meeting to call for victory in

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[447] "[국민일보 남극을 가다] (7) 지원없는 한국대원 '축제 외톨이'," ("Lacking government support, Korean researchers can't join the festival,") *Kookmin Daily*, May 15, 1999.
[448] "남극 본토진입 급한데...," ("It's urgent to enter into the Antarctic continent…,") *Han Kyurye*, July 12, 2000.
[449] "Antarctica and Science and Technology in the 21st Century" KORDI, 2000, http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.
[450] "과학 / 극지 과학기술 세미나 개최," ("A seminar on Polar Science and Technology is scheduled to be held,") *Dong-A Daily*, June 14, 2001.
[451] Interview with Han Seungsoo, Prime Minister of Korea, *Arirang TV*, February 25, 2009.
[452] "자원과 순수의 대륙 다시 '남극속으로'," ("Let's go into the Antarctic continent with resources,") *Han Kyurye*, June 26, 2001.
[453] Ibid.

the 16th general election coming in April. After the meeting, he called the Dokdo Island Guard and King Sejong Station to cheer them up as part of the party's election campaign, and visited the National Cemetery.[454] On 1 December 2002, there was a disagreement on dispatching a researcher from the Korea Meteorological Administration (KMA) to King Sejong Base between the government and the KMA. Since the establishment of King Sejong Base, a staff member from the KMA had been dispatched to the base as a meteorological researcher. That year, however, the government was opposed to this practice. A KMA official said *"the meteorological researcher has been studying the global environment and climate changes…if not dispatched this year, all the research results accumulated so far will be of no use"*. The Kim government, however, notified the KMA that it was inappropriate to have a government employee dispatched for a year.[455]

Throughout the Kim administration, the Antarctic enterprise was neglected. Even after repaying the loan from the IMF in full, the leftist government's priority was not its Antarctic enterprise, but the policy to improve its relationship with North Korea.
It was only half a year before the retirement of the Kim administration and at the same time, the 16th presidential election that the Ministry of Maritime Affairs and Fisheries announced the 'Polar Research Long-term Development Plan' where US$70million would be spent to construct a second station in the Antarctic Continent in 2006.[456] Since then, the buck has been passed through another progressive government to the present government.

(6) Left Populist Roh Moo-hyun and Antarctica

On 13 June 2002 there was an accident where two Korean middle school students were run over by a US armoured vehicle in Kyungki Province.[457] In particular, this accident occurred on the road used by Hyochun Primary School students to commute. According to the Service Regulations of United States Forces Korea (USFK), any US military training using the road should be notified to the village foreman and the chief of the police station. In the

[454] "여야 3 당, 새천년 정국구상-총선전략," ("The ruling and opposition parties making strategies for the general election,") *Segye Daily*, January 3, 2000.
[455] "남극 세종기지 기상청 직원운용 마찰," ("A problem in dispatching a KMA researcher to the King Sejong Station,") *Kookmin Daily*, December 2, 2002.
[456] "남극에 제 2 기지 만든다," ("The second Antarctic base is going to be built,") *Dong-A Daily*, June 25, 2002.
[457] "미군 장갑차에 치여 길가던 여중생 둘 숨져," ("Two Korean middle school students were killed by a US armoured vehicle,") *Moonhwa Daily*, June 14, 2002.

announcement of the first investigation results, the Commanding General of the 2nd Infantry Division, Major General Russell L. Honore, said he had notified the village foreman and the chief of the police station in advance. However, as the village foreman denied having received a notice on the training, the Major General said he would do it from next time. Since there were many other unclear explanations on the accident, dozens of civic groups held a rally, urging USFK to transfer the right to investigate and jurisdiction to the Korean Prosecution and Judiciary. As the rally spread across the nation, for the first time in Korean history after SOFA (Status of Forces Agreement)[458] was signed, (Agreement under Article 4 of the Mutual Defence Treaty between the Republic of Korea and the United States of America, regarding facilities and areas and the status of United States armed forces in the Republic of Korea) the Ministry of Justice requested USFK to give up the jurisdiction.[459]

However, the request of the Ministry of Justice was not accepted. Five months after the accident, USFK began a trial with Mark Walker and Fernando Nino who were the driver and the track commander of the 54-ton minesweeping vehicle, which struck the two 14-year-old middle-school students respectively as the defendant on charges of negligent homicide.[460] A few days later, USFK found both Mark Walker and Fernando Nino not guilty.[461] On 27 November 2002 President George W. Bush offered his apology for the loss of the girls through the US ambassador to Korea.[462] However, with the case closed and key questions still unanswered, the Korean civil society was calling for a revision to the Status of Forces Agreement (SOFA). Anti-Americanism reached its peak in Korea and candlelit vigils spread across the nation. It was a month before the election for the 16th president of Korea. Roh Moo-hyun, a presidential candidate from the Democratic Party, seized this momentum and began politicising it. In his street election campaign he promised *"I will tell President Bush*

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458 SOFA was signed in 1967. It stipulates the legal status of the US soldiers. Under Article 22, Section 3 (criminal jurisdiction), the first jurisdiction on crimes committed by US soldiers in the line of duty belongs to USFK.

459 "美軍 장갑차사건 진실은/ 통학로 통행 사전통보규정 어겨," ("What is the truth about the accident caused by a US armoured vehicle? / The Service Regulations of United States Forces Korea was broken,") *Seoul Shinmoon*, July 12, 2002.

460 "미군 '여중생치사' 재판시작,언론에 첫공개...혐의 美병사 무죄주장," ("The trial on the accident caused by a US armoured vehicle begins…The US soldier insists on his being innocent," *Kyunghyang*, November 19, 2002.

461 "장갑차美軍 모두 무죄," ("The two US soldiers are found innocent,") *Seoul Shinmoon*, November 23, 2002.

462 "부시 사과 "여중생사망 슬픔과 유감", 美대사 통해 메시지 전달," ("President Bush sent a message through the US ambassador to Korea that 'I'm sorry about the loss of the girls',") *Kyunghyang*, November 28, 2002.

the revision of the SOFA is the only way to improve Korea-US relationships…I will make sure our national pride will never be hurt again by unequal relations between the two countries".[463] He also made a newspaper advertisement with a picture of candlelight, saying *"I've never been such ashamed of myself as a Korean politician…Misun and Hyosun* (the dead girls' names), *yell your guts out in a better world…I will make a new Korea".*[464]

Even after he took office, President Roh continued his attempt to appeal to popular sentiment by every possible means every time he was faced with challenges. Whenever the approval rating for his government dropped, whether it was because of his brother's bribery scandal or his being impeached for his breach of the Election Law or some other reason, he created an issue, such as Korea-Japan historical conflict, that would stir up the people's emotions in favour of his government. To some extent, he utilised the Antarctic enterprise as a means to maintain a certain level of approval rating and a way out from a challenge for the government.

On 8 December 2003, eight researchers working at King Sejong Station met with a disaster, while travelling in a rubber raft. Next day, seven of them were rescued by a Chilean and Russian rescue team, and one was found dead.[465] With media and the people blaming the government for the death caused by the poor transport, the Ministry of Maritime Affairs and Fisheries announced *"we will request the Korea Ocean Research and Development Institute (KORDI) to make a basic design for an icebreaker within this week".*[466] Prior to this accident, the Roh administration seemed indifferent to its Antarctic enterprise. According to an official from the KORDI, in the previous Kim government the building of an icebreaker was already planned. The Roh government, however, had suspended the execution of the budget for the plan.[467] Moreover, King Sejong Station had been operated by the KORDI under the Prime Minister's Office. Therefore, it was the Prime Minister's Office that was supposed to understand, direct and supervise the overall operation of the station as well as to allocate and

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[463] "李一盧 반미 표심잡기 경쟁," ("Two presidential candidates compete to win votes by manipulating the anti-American sentiment,") *Kookmin Daily*, December 9, 2002.
[464] This advertisement was shown on the first page of *the Dong-A Daily, the Hankurye, the Chosun Daily and the Moonhwa Daily* on December 7, 2002.
[465] "실종 3 명도 구조됐다 - 남극 세종기지 조난 50 시간만에 넬슨섬에서," ("Three missing researchers rescued from Nelson Island after 50 hours,") *Moonhwa Daily*, December 9, 2003.
[466] "남극 세종기지 대원 조난 / 얼음깨며 항해...극지연구 필수," ("The King Sejong Station researchers travel breaking ice themselves,") *Moonhwa Daily*, December 9, 2003.
[467] "남극 세종기지 대원 조난 / '이동장비 고무보트가 고작 조난사건은 예고된 人災'," ("The King Sejong Station researchers travel by rubber raft –it was a man-made disaster,") *Moonhwa Daily*, December 9, 2003.

execute the budget for the operation. Nonetheless, right after the accident, an official of the Prime Minister's Office asked *"what does the KORDI do?"* in response to enquiries by media about the current situation of the accident. Concerning this response, a researcher at King Sejong Station said *"due to lack of expertise of the supervisory office, the most difficult part of our work is to explain the appropriateness of our research so that they are not going to cut the budget"*.[468]

In order to appease the public anger, Prime Minister Ko Kun on 10 December 2003 convened the Policy Coordination Council on Current Affairs of the State to discuss the operational improvement of King Sejong Station,[469] and the Ministry of Government Affairs and Home Affairs decided to posthumously award the National Medal of Seokryujang to Jun Jaekyu, who had died in the disaster.[470] However, another problem vexed the Roh government: the bereaved family demanded burying him in the National Cemetery. Since according to the Law of the National Cemetery, only patriotic martyrs, and fallen soldiers and policemen were allowed to be buried in the National Cemetery, the government rejected the request.[471] In the Council held on 10 December, Prime Minister Ko said *"it is not possible to have him buried in the National Cemetery as he was not a civil servant and there is no legal ground"*, and the bereaved family was notified of this conclusion on 13 December.[472] In opposition to this decision, the student union from Seoul National University, from which Jun Jaekyu graduated, organised an on-line and off-line campaign for the burial of Jun Jaekyu in the National Cemetery.[473] People in Jun Jaekyu's hometown notified the government that they were going to hold a candlelight vigil from the 16th to 20th.[474] Likewise, the Union of Korean Scientists and Engineers, the Korea Science Technology Union and the student union from Seoul

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[468] "<취재수첩>`남극기지 조난` 정부 뭘했나," ("What has the government done about the accident in Antarctica?") *Moonhwa Daily*, December 10, 2003.
[469] "조난사고 4 일째—현지 상황·정부대책 / "모두 남겠다"…세종기지 정상화," ("Four days after the accident-the current situations and follow-up measures of the government/ the King Sejong Station being normalised,") *Kookmin Daily*, December 11, 2003.
[470] "정부, 故전재규대원에 국민훈장 추서," ("The government awarding the National Medal of Seokryujang to Jun Jaekyu,") *Dong-A Daily*, December 12, 2003.
[471] "남극사망 전재규씨 국립묘지안장 논란 / 유족 '국가발전에 기여', 정부 '선례가 없다'," ("The debate on Jun Jaekyu's burial in the National Cemetery/ 'his contribution to the nation' or 'no precedence',") *Moonhwa Daily*, December 13, 2003.
[472] Ibid.
[473] Ibid.
[474] "뉴스 꾸러미 / 故전재규대원 고향서 촛불집회," ("A candlelight vigil in Jun Jaekyu's hometown,") *Kyunghyang*, December 16, 2003.

National University issued a statement urging the Roh government to bury him in the National Cemetery.[475]

Feeling pressured by the popular demand, President Roh instructed the Chief Presidential Secretary *"it looks practically hard, but discuss it once more"*.[476] Being a populist politician, President Roh also had to satisfy hardliners who insisted that president Roh not be a popularity opportunist breaking law and principles.[477] In the Cabinet meeting held on 16 December, the issue of Jun Jaekyu's burial in the National Cemetery was discussed. In the meeting, Prime Minister Ko said *"once he is buried in the National Cemetery, we will have to have everyone who died or will die under similar circumstances buried in the National Cemetery"*.[478] In the end, they failed to reach an agreement and deferred their decision.[479]

President Roh came to power being a left populist. However, it was inevitable for him to change his political colour for the sake of smooth statecraft. In contrast to his election promise on his attitude toward the US, he agreed to dispatch Korean troops to assist the US in Iraq right after his inauguration. Disappointed with his decision, many progressives who had supported him turned their back on his government. From that moment on, as a populist, his top priority was to maintain as much existing support from the progressives as possible and compromise with the conservatives. His changing political colour was revealed in all of his policies including the policy on Antarctic enterprise. On 17 December 2003, the Roh government made its final decision on the burial. In order not to arouse anger from the conservatives, the body of Jun Jaekyu was not permitted to enter the National Cemetery. Likewise, in order to minimise disappointment felt by the progressives, the Ministry of Health and Welfare announced its decision to recognise Jun Jaekyu as a 'uisaja', who receives the same treatment as men of national merit.[480] This decision, however, still invited

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[475] "고 전재규 연구원 국립묘지 안장을'," ("Jun Jaekyu's burial in the National Cemetery,") *Han Kyurye*, December 16, 2003.
[476] "故전재규씨 국립묘지 안장 검토…盧대통령 지시로 재논의," ("President Roh instructed the Chief Presidential Secretary to review the issue of Jun Jaekyu's burial in the National Cemetery ,") *Dong-A Daily*, December 15, 2003.
[477] See "남극 세종기지 조난사고 사망 故전재규 연구원 국립묘지 안장·의사자 인정 논란," ("The debate on Jun Jaekyu's burial in the National Cemetery,") *Seoul Shinmoon*, December 15, 2003.
[478] "의사자 위한 국립묘지 검토," ("Reviewing Jun Jaekyu's burial in the National Cemetery,") *Hankook Daily*, December 17, 2003.
[479] "'남극 조난사고' 전재규 대원 영결식," ("The send off ceremony of Jun Jaekyu,") *Dong-A Daily*, December 17, 2003.
[480] "남극대원 故전재규씨 '의사자' 결정," ("Jun Jaekyu as a 'uisaja',") *Kyunghyang*, December 18, 2003.

a lot of criticism from the progressives and weakened the political base of the Roh government.

In order to settle the public sentiment agitated by the wreck and the issue of Jun Jaekyu's burial in preparation for the General Election to be held on 15 April 2004, the Roh government announced that it was going to make the Polar Research Department in the KORDI an independent affiliated organisation and increase the size of the icebreaker from 5000 tons, which was originally planned, to 10,000 tons.[481] On 12 March 2004, the National Assembly voted for the impeachment of President Roh for his violating the Election Law.[482] The ruling party, however, politicised the impeachment and encouraged people to hold candlelight vigils across the nation against the Grand National Party who had impeached President Roh. During the impeachment scandal, the approval ratings for the Roh government dramatically increased and the ruling party won a big victory in the General Election. After the election, the Constitutional Court dismissed the case of the impeachment against President Roh.[483] To maintain the increased public popularity for the government, the Roh administration announced that it was going to develop polar research as a pan-government business, increasing the number of staff from 40 to 100, and the annual budget from US$3million to US$20million.[484] This sudden development in Korea's Antarctic business, in fact, started from the populist reaction of President Roh to the death of Jun Jaekyu. Dr. Ko Chang-doo, from the Maritime and Ocean Engineering Research Institute (MOERI), said *"due to the ignorance of the government about ocean research, I thought the building of an icebreaker was going to face difficulties…the building plan is going smoothly owing to the death of Jun Jaekyu"*.[485]

On 28 June 2007, the Roh government announced that within the year it was going to decide the location on which the second Antarctic Continental base was going to be built, and

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[481] "남극 쇄빙선 1 만톤급으로," ("Building a 10,000 ton icebreaker,") *Seoul Shinmoon*, February 9, 2004.
[482]"盧대통령 탄핵안 가결/심리착수…… 쟁점과 전망," ("The prospect for the impeachment of President Roh ,") *Hankook Daily*, March 13, 2004.
[483]"탄핵기각 노무현 대통령 직무복귀," ("The case of the impeachment dismissed, President Roh comes back to office,") *Hankook Daily*, May 15, 2004.
[484]"`극지연구소` 독립기관으로 출범 - 자율적 예산운영·편성권," ("KOPRI launched as an independent research institute,") *Moonhwa Daily*, May 13, 2004.
[485] "해양시스템 안전연구소 고창두 박사 "국내최초 쇄빙선 제작 故전재규대원 기릴터"("Dr. Ko Chang-doo from the Maritime and Ocean Engineering Research Institute (MOERI) talks about the first icebreaker and Jun Jaekyu,") *Kyunghyang*, December 8, 2004.

complete the construction of the base by 2011.[486] However, the Korea Polar Research Institute (KOPRI) was doubtful about the plan. A core official from the KOPRI said *"we've never heard about the plan before…it is physically impossible…we were going to confirm the location in the first half of next year"*.[487] Since making a field investigation on the candidate locations for the new base is only possible in summer, the government's plan was irrational. However, with the Presidential Election to come in December and his ratings hitting rock bottom, rational or irrational was not a concern to the populist president. The only way to win the election was to unify the support from the progressives once again by creating new sensational issues. In this vein he even met with the North Korean leader, Kim Jungil in Pyongyang on 4 October 2007 to discuss peace and prosperity on the Korean peninsula.[488] On 11 October 2007, the Ministry of Health and Welfare announced that the body of Jun Jaekyu was going to be transferred to the National Cemetery on 13 October 2007.[489] Along with President Roh's desperate effort to create temporary sensations before the Presidential Election, the Ministry of Maritime Affairs and Fisheries held a public naming contest for the icebreaker which was scheduled to be built in two years time,[490] as though it wished to imprint in the people's minds the fact that the building of the icebreaker had been initiated by President Roh.

As President Kim Dae-jung's successor, President Roh Moo-hyun, was expected to follow the same keynote of government administration, focussing on a short-term economic growth and the succession of the so called "sunshine policy" toward North Korea. According to this anticipated keynote of the Roh government, the Antarctic enterprise was also expected to be neglected. However, the expectation turned out to be wrong. Being a populist politician, President Roh had no choice but to increase the investment in, and commitment to, the Antarctic enterprise in order to win back the people's minds that turned against the leftist government after the death of a Korean researcher in Antarctica. Learning about the poor researching conditions of the King Sejong Station and the government's lack of commitment

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[486] "[현장메모] '의욕'만 앞선 남극기지 건설," ("Too aggressive to build an Antarctic base,") *Segye Daily*, June 30, 2007.
[487] Ibid.
[488] "2007 남북정상회담 / 두차례 회담 대화 내용," ("The 2007 South and North Korea Summit,") *Dong-A Daily*, October 4, 2007.
[489] "義死 故 전재규-심경철씨 대전현충원에 안장하기로," ("The body of Jun Jaekyu to be transferred to the National Cemetery,") *Dong-A Daily*, October 12, 2007.
[490] "남`북극 누빌 '쇄빙선' 이름 지어주세요," ("Name the icebreaker to sail in Antarctica and the Arctic,") *Naeil Shinmoon*, October 24, 2007.

to the Antarctic research, the Korean citizens and many civil groups urged the government to treat the death of the researcher with exceptional respect. Thanks to President Roh's populist response to the public demand, there was considerable progress in the infrastructural development of Korea's Antarctic enterprise.

(7) Lee Myung-bak's Low Carbon Green Growth and Antarctica

Lee Myung-bak is the 17th president of Korea and launched a conservative government with an objective to 'revitalise the economy' through 'a small government and big market'.[491] President Lee introduced a new economic growth paradigm, called 'Low Carbon Green Growth' in his message during the National Liberation Celebrations in 2008.[492] He stressed that the large corporation-friendly growth strategy would be abandoned, but a green-friendly growth policy concentrating more on future-oriented sustainable growth would take its place. In other words, green growth, which is emerging in opposition to the obsession with a short-term high growth and laying stress on the environment, is the nation's new development paradigm creating new growth forces and jobs through various policies to reduce greenhouse gases and environmental pollution. President Lee added *"this is an unavoidable path in order not to fall behind in the future global competition…from now on we should develop and invest in fundamental technology by which carbon dioxide is not emitted"*.[493]

On 11 November 2009, President Lee had a summit meeting with Chilean President Michelle Bachelet. When they were discussing joint Antarctic development, President Lee said *"since I'm pushing ahead with the vision of Low Carbon Green Growth as the 21st century economic growth strategy, I'm greatly interested in the Polar Regions"*.[494] An important question regarding his remark would be 'what are the relations between President Lee's economic growth paradigm, called 'Low Carbon Green Growth' and the Polar Regions?' There are three fields- Expansion of New Growth Force, Improvement of Living Quality and Environment, and Enhancement of National Prestige - and 10 policies promoted by the Lee

[491] "이명박 대통령 당선/ 경제도 교육도 '시장 자율'…신자유주의 가속화할 듯," ("Lee Myung-bak elected President of Korea/ 'free market'…neoliberalism accelerates,") *Han Kyurye*, December 20, 2007.
[492] *SBS* TV News, August 15, 2008.
[493] Ibid.
[494] "한-칠레 '두 MB' 정상 "녹색성장 협력"…미첼 바첼레트 이니셜도 MB," ("The summits of Korea and Chile cooperates for 'green growth'," *Dong-A Daily*, November 12, 2009.

government in order to realise its new economic strategy.[495] One of the policy directions for Expansion of New Growth Force is aimed at realising energy independence. A policy direction for Improvement of Living Quality and Environment is designed to actively respond to climate change. The Lee government suggests a policy direction in which Korea is turning to be an exemplary nation for global green growth in Enhancement of National Prestige.[496]

The success of the Lee government's Green Growth in terms of energy independence, response to climate change and being an exemplary nation for global green growth depends on its performance in both Korea and Antarctica. Domestically, the Lee government has introduced several policies to bring in energy saving effects by changing the people's lifestyle to 'Low Carbon Lifestyle', and to increase the supply of new renewable energy. Outside Korea, the Lee government has been actively exploring remote oceans, including the Antarctic Ocean, for marine energy. Jung Jonghwan, the Minister of Land, Transport and Maritime Affairs, said *"in preparation for energy exhaustion and environmental pollution, we are paying attention to marine clean energy"*.[497] Hence, the Lee government's energy policy, emerging from the existing policy of depending heavily on imported energy, focuses on its development experience or utilisation of its human and material resources in order to secure energy sources from the Polar Regions and deep seafloors. The icebreaker, *Araon*, has been of great support for President Lee's energy independence policy. Lee Honggum, President of the KOPRI, said *"Araon is sailing between the Arctic and Antarctica over 300 days a year in order to explore petroleum resources and gas hydrate"*.[498]

The core of President Lee's Green Growth is how to cope with a resources crisis and an environmental crisis (climate change), and to turn the crises into an opportunity for economic development.[499] His strong awareness of the importance of Antarctica in dealing with climate change was well-expressed in his encouragement message to the research team at King Sejong Station. *"Antarctica is the beginning and end of climate change…Since my*

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[495] "정부 '저탄소 녹색성장' 청사진 마련… 생활속 녹색혁명 통한 선진국 도약," ("The government suggesting a blueprint for 'low carbon green growth'…… joining the ranks of developed nations through green revolution,") *Kookmin Daily*, February 17, 2009.
[496] Ibid.
[497] Jung Jong-hwan, the Minister of Land, Transport and Maritime Affairs, "기고 / '무한 영토' 바다를 개척하자," "Develop the ocean, a limitless territory,") *Dong-A Daily*, June 1, 2009.
[498] Lee Honggum, President of the KOPRI, "[과학세상]극지 누빌 우리의 쇄빙연구선," ("Our icebreaker wihich will sail in the polar regions,") *Dong-A Daily*, May 21, 2009.
[499] President Lee's Administrative Policy Speech, *SBS*, October 27, 2008.

inauguration, I have been handling the climate change issue as the government's task to carry out, increasing support for the research and promoting international cooperation" said President Lee.[500] Domestically, in preparation for climate change and natural disasters, the Lee government has been 'greenising the Korean territory' through various government-led enterprises, such as the 1 million green homes project, the fourth largest green car development project[501] and the project of reducing greenhouse gas by 30 percent.[502] In the meantime, the Lee government is constructing the second base on the Antarctic Continent. The most important research expected to be conducted in the second base is none other than research on climate change.[503] President Lee, who was a former CEO of Hyundai Construction and elected President due to the people's disillusionment and disappointment with the two progressive governments' poor economic performance for the previous 10 years, is not an environmentalist. His support for research on climate change in Antarctica lies in his economic interest. In his encouragement message to the research team at King Sejong Station, he said *"Your devotional research activities will be a practical basis upon which we increase our national interests"*.[504] In the first meeting of the Green Growth Committee, President Lee stated *"studying climate change is not only for saving the earth, but of industrial value…the people misunderstand Green Growth as an environmental campaign"*.[505]

To establish the nation's image as a leading nation for global green growth, the Lee government enacted 'the Green Growth Act', and adopted a number of policies such as the Green Industry Development Strategy, Green New Deal Policy, the Vision of New Growth Force, and the National Strategy and five-year Plan for Green Growth.[506] At the same time, the Lee government made steady diplomatic efforts to have its application for its Antarctic

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[500] Korean Presidency, "The collection of President Lee's speeches (1)," *Korean Presidency*, No 208, 2009, p.289-290.

[501] "8·15 경축사/ 불도저식 '7·4·7' 내리고 '지속가능 녹색성장' 새 깃발," ("President Lee's message during the National Liberation Celebrations in 2008/sustainable green growth,") *Hankook Daily*, August 16, 2008.

[502] "온실가스 감축 확정… 2020 년까지 30% ↓," ("Greenhouse gas will be reduced by 30% by 2020,") *Segye Daily*, November 18, 2009.

[503] Kim Yedong, the Head of Antarctic Continental Station Construction Committee of KOPRI, " [초대석]남극서 귀환 김예동 대륙기지추진위원장," ("Kim Yedong returns from Antarctica,") *Dong-A Daily*, February 24, 2010.

[504] Korean Presidency, "The collection of President Lee's speeches (1)," *Korean Presidency*, No 208, 2009, p.289-290.

[505] "李대통령 '녹색성장, 환경운동 아니다'," ("President Lee says 'Green Growth is not an environmental campaign',") *Asia Today*, February 16, 2009.

[506] "녹색성장 선언 1 년/ <하> 나눔까지 생각하는, 진정한 저탄소 사회로," ("The first anniversary of the declaration of green growth/ towards a true low carbon society,") *Hankook Daily*, August 17, 2009.

Specially Protected Area (ASPA) approved to enhance its national image as an exemplary nation for environmental protection. Thanks to the government's effort, the application was approved in the 32nd ATCM (Antarctic Treaty Consultative Meeting) on 17 April 2009.[507] Na Junggyun, the Head of the Global Environment Department in the Ministry of Environment, said *"the 'Penguin Village' assigned as our ASPA will upgrade our national status to a higher level as a leading nation for the environment"*.[508]

In addition to 'energy independence', 'climate change' and 'an exemplary nation for global green growth', many Korean polar sciences correspond to the new growth engines the Lee government pursues through its Green Growth. Bio Technology is a representative example. Regardless of the effectiveness of President Lee's Green Growth as an economic strategy, there is a lot in common between Korea's Antarctic enterprise and Green Growth. Expecting the Antarctic enterprise to reinforce the Low Carbon Green Growth, the Lee government has significantly increased its fund for the KOPRI[509] and popularised the Antarctic enterprise through various channels so that it can win public consensus on its long-term Antarctic enterprise, which will strengthen its long-term Green Growth in return.

[507] "우리나라가 남극 `펭귄마을` 지킨다," ("We preserve *'Penguin Village'* in Antarctica,") *Mail Kyungje*, April 19, 2009.
[508] "남극 '펭귄 마을' 한국이 지킨다," ("Korea preserves *'Penguin Village'* in Antarctica,") *Han Kyurye*, April 19, 2009.
[509] Interview with Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.

6.0 The Role of Antarctica in South Korea's International Politics

The Polar Regions are crucial areas where South Korea has recently recognized their significance in its international politics and foreign policy. Along with rapid changes in the world situations and in Korea's national strength, Seoul's polar policy in terms of its international relations has also been evolving. This chapter will outline the meaning of the Polar Regions to Korea's international politics by examining two long-existing aims and two relatively new objectives pursued by the ROK through its Antarctic enterprise.

6.1 South Korea's Antarctic Presence and Voice on Antarctic Affairs

Despite different agendas and motivations in Antarctic policy among the governments of Korea, two aims have been consistently pursued from the Jun administration to the current government. One of the aims is to maintain and negotiate its Antarctic presence and voice on Antarctic affairs. With the huge potential geopolitical and economic value of Antarctica, but at the same time with a great uncertainty of future development in the region, Seoul has attempted to win a vested right and increase the right to maximize its national interest in the future development of Antarctica. The vested right that South Korea has been pursuing is the right to sovereignty and the right to resources development. All the Antarctic activities of South Korea including scientific research, international academic conferences and diplomatic efforts to address environmental issues, have been carried out with the theme of 'securing a vested interest'.

The Jun administration publicly announced that it was making its diplomatic effort to join the Antarctic Treaty and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) so that it could secure a vested right in the Antarctic Continent and Ocean.[510] In fact, the Jun administration had very little interest in the 'conservation of Antarctic marine living resources'. It viewed the membership of CCAMLR as a stepping stone to the membership of the Antarctic Treaty where it believed it could join the decision-

[510] "남극조약 가입 등 본격 추진," ("The government attempts to join the Antarctic Treaty,") *Dong-A Daily*, March 9, 1983.

making process in the division of sovereignty over Antarctica.[511] In this vein, the Fishery Agency announced that it would extend the national funding for fishing in the Antarctic Ocean for the next three years despite the expected deficit, in order to secure a vested right to Antarctic development.[512] After joining the Antarctic Treaty, the Jun government announced that it would construct a permanent station in a hurry so that it could secure the right to participate in the Antarctic Treaty Consultative Meeting (ATCM) held in 1989.[513] In fact, Lee Myungbak, who was a CEO of Hyundai Construction at that time, completed the construction of King Sejong Station within two months, whereas the Soviet Union took two years to build its station with 800 workers.[514] The reason the South Korean government constructed the station in a great hurry was well-explained by Huan Vifias, the captain of the Chilean Antarctic station at that time. He explained: *"only those nations who are Antarctic Treaty Consultative Parties (ATCP) in 1989 can claim their rights in the revision of the treaty for Antarctic territorial rights in 1991…thanks to the construction of King Sejong Station, South Korea will be the last nation to claim the right"*.[515]

The 19th ATCM was held in Seoul in 1995. Internally, Seoul hosted this event with the same theme of 'securing a vested interest'. In particular, since it became a consultative party, South Korea has upgraded its theme to 'enhancing the vested interest'. Lee Kiju, the chairman of the Seoul ATCM stressed the importance of hosting the ATCM in terms of maintaining Korea's presence and voice on Antarctic affairs, saying *"this conference will be an opportunity (for Korea) to lead the operation of the Antarctic Treaty System"*.[516] On 5 September 1996, the Ministry of Maritime Affairs and Fisheries announced for the first time its plan to construct a second Antarctic station. The objective of the plan was also to enhance

[511] "남극자원 보존협약가입신청서 제출," ("A letter of application submitted to Convention on the Conservation of Antarctic Marine Living Resources,") *Mail Kyungje*, March 6, 1984.
[512] "남빙양 출어지원 87 년까지 연장," ("The government's subsidy for fishing in the Antarctic Ocean will be extended to 1987,") *Mail Kyunje*, June 19, 1984.
[513] "남극기지 건설준비 한창," ("The preparation for the construction of the Antarctic station is at its peak,") *Dong-A Daily*, July 9, 1987.
[514] "최고 경영자 정훈목 현대건설 사장 선진국 건설시장 도전 본격채비," ("Jung Hoonmok, Director of Hyundai Construction, challenges the construction market of advanced countries,") *Mail Kyunje*, March 11, 1988.
[515] "만년빙 애국가로 깨어나다," ("The Korean national anthem wakes up the polar icecaps,") *Kyunghyang*, January 1, 1988.
[516] "인터뷰 서울 남극조약협의 당사국 회의 의장," ("Interview with the chairman of the Seoul ATCM,") *Mail Kyungje*, May 8, 1995.

its vested interest in Antarctica.[517] This construction plan was passed down to the next government. On 4 May 2000, the Ministry of Maritime Affairs and Fisheries reported to President Kim Daejung on its plan to construct the second Antarctic base. The objective of the plan remained unchanged. It was 'securing territorial rights in Antarctica'.[518] In the same year, the Ministry of Maritime Affairs and Fisheries announced its plan to increase the support for fishing krill in the Antarctic Ocean. Sung Kiman, the Head of the Department of Deep-sea Fishery in the Ministry of Maritime Affairs and Fisheries, explained the necessity for the plan by saying *"it is for securing a vested right to the future development of (Antarctic) biological resources"*.[519] Jung Wootaek, the Minister of Maritime Affairs and Fisheries, also stressed the idea of 'securing a vested right or interest' by expressing his concern, *"the competition among nations for the leading position in Antarctica is fierce"*.[520]

Many Korean polar researchers also regard their Antarctic research as a tool by which South Korea can exercise its political influence on Antarctic affairs. After South Korea joined the Antarctic Treaty, Lee Seohyang, a senior researcher in the KORDI explained South Korea's position on its vested interest, saying *"South Korea advocates the exclusive system of the Antarctic Treaty"*.[521] However, the competition for a vested right is not only between the member states of the Antarctic Treaty and non-member states outside the Treaty System. As a relative newcomer to the Polar Regions, South Korea needs to compete with the leading nations in order to enhance its presence in the Regions, which is the ultimate goal of Korea's polar research.[522] The first step to win the competition is to fight against sovereignty over the Arctic and Antarctica claimed by the leading nations. Lee Honggum, the President of the KOPRI, argued that South Korea should invalidate the potential sovereignty claimed by the leading nations through accumulated knowledge of Antarctica and diplomatic efforts.[523]

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[517]"남극에 제 2 기지/해양부 추진/2000 년께 착공 예정," ("Ministry of Maritime Affairs and Fisheries begins to build the second Antarctic station in 2000,") *Kyunghyang*, September 6, 1996.
[518] "해양부 업무보고/'韓-中 어업협정 연내 체결'," ("Ministry of Maritime Affairs and Fisheries plans to sign a fisheries agreement with China within the year,") *Dong-A Daily*, May 5, 2000.
[519] "남극 '크릴', 원양업계 벤처 대상 부상," ("Antarctic krill, the deep-sea fishery ventures,") *Segye Daily*, December 13, 2000.
[520]"바다의 날 /'바다의 황금' 항만산업을 키워라," ("Develop the port industry, the gold of the ocean,") *Dong-A Daily*, May 31, 2001.
[521] "조약위 당사국 되는 것이 선결과제," ("Becoming a consultative member of the Antarctic Treaty is the top priority,") *Mail Kyungje*, March 6, 1987.
[522] Phone Interview with Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August 17, 2010.
[523] Lee Honggum, President of KOPRI, Interview with the Korean Federation of Science and Technology Societies, May 28, 2007.

Ironically, the ROK is in an awkward position to secure and maintain its presence in Antarctica. In order to secure its privileges as a consultative party, South Korea advocates the exclusive system of the Antarctic Treaty. At the same time, however, it needs to fight the leading nations who claim exclusive vested rights within the exclusive system of the Antarctic Treaty. On 27 May 2008, The Ministry of Education, Science and Technology signed the 'Memorandum of Agreement to Enhance Cooperation for Polar Science and Technology' with its Chinese counterpart, based on the mutual recognition that both Korea and China are relatively left behind by the Western leading nations in the competition of polar development.[524] Another dilemma Seoul is facing is its contradictory position on Antarctica and the Arctic. Unlike in Antarctica, South Korea has no legal ground to guarantee its presence in the Arctic. Therefore, the only way for Korea to secure its vested interest in the future development of the Arctic is through its scientific activities in the region. In order to negotiate its Arctic presence and voice in response to the grouping phenomena of the coastal nations in the Arctic, South Korea conducts bi-lateral or multi-lateral scientific research in the region. The foundation of the Asian Forum for Polar Sciences (AFOPS) is a good example of South Korea's effort to prevent the coastal nations from claiming their exclusive rights.

Void of concrete legal ground, the future of the Polar Regions is uncertain. The ROK views this uncertainty as an opportunity to be a part of shaping a new legal regime of the Polar Regions in its favour. Therefore, the ultimate goal of Korea's polar research is to be able to lead the new legal order by exercising its strong right to speak and influence polar affairs. South Korea is aware of the importance of producing a good quantity and quality of polar research results to maintain its vested right in the next regime of the Polar Regions.[525]

6.2 Antarctica and South Korea's International Status

As mentioned in Chapter 3, Korea's polar research is aimed at securing its national interest by enhancing its national prestige.[526] In terms of political interest, the ROK is seeking to take

[524] "한-중, '자원의 보고' 극지개발 손잡는다" ("Korea and China hold each other's hands to develop the Polar Regions which are repositories of resources,") *Yunhap News*, May 27, 2008.
[525] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[526] http://www.kopri.re.kr/index.jsp.

on leadership and exercise more influence in the international political arena. In particular, Korea's international status has never been satisfactory, compared with its economic power.[527] In order to improve its national prestige in the world community, Korea has been sparing no effort to hold international sports events and international summit meetings such as the APEC Economic Leaders' Meeting and G20 Summit. In this vein, Korea expects to promote its contribution to the common interest of all humans through its Antarctic research, such as research on global climate change. It views its Antarctic enterprise as an investment to create Korea's image of a first-class nation and enhance its international status.[528]

Although it sounds vague in terms of its effectiveness, 'the enhancing of international status' has been at the centre of Korea's justification for its Antarctic enterprise, which is not supposed to produce immediate tangible results. This justification was first addressed when Lee Wongyung, the Minister of Foreign Affairs, reported the operational planning of the year to President Jun. He reported that the Ministry was going to save no effort to join the Antarctic Treaty in order to boost the nation's international status.[529] After joining the Treaty, an official of the Ministry of Foreign Affairs explained the meaning of the membership, saying *"it will bring a symbolic effect on Korea's international status…"*.[530] As a matter of fact, the improved international status through joining the Antarctic Treaty and the Antarctic Treaty Consultative Meeting (ATCM) was a basis on which South Korea could became a member of the United Nations in 1991.[531]

This keynote of Korea's Antarctic activity has remained the same from the Jun administration to the current Lee government. During the Roh Taewoo government, Kim Jinhyun, the Minister of Science and Technology stated about the aim of Korea's Antarctic research: *"it is for confirming our presence in the international arena"*.[532] Likewise, during his visit to Chile President Kim Yungsam said over the phone to Kim Yedong, the research team leader

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527 Interview with Han Seungsoo, Prime Minister of Korea, *Arirang TV*, February 25, 2009.
528 Letter Interview with Kim Yedong, Principal Researcher of KOPRI and Former Chairman of Asian Forum for Polar Sciences (AFOPS), April 18, 2010.
529 "경제통상외교 주력 외무부 업무보고," ("The Ministry of Foreign Affairs reports its plan to focus on diplomacy for trade,") *Dong-A Daily*, January 22, 1986.
530"남극조약가입 33 번째로," ("South Korea, the 33rd member of the Antarctic Treaty,") *Kyunghyang*, December 3, 1986.
531 Lee Honggum, President of KOPRI, "Antarctica, a natural proving ground full of resources,"*The Newsis*, March 5, 2008.
532 Kim Jinhyun, the Minister of Science and Technology, "남극개발은 도약의 상징," ("The Antarctic development is a symbol of our takeoff,") *Dong-A Daily*, January 27, 1993.

at King Sejong Station: "*keep flaunting Korea's national prestige to the world community"*.[533] During the Roh Moohyun administration, the Ministry of Environment with seven other nations jointly assigned an area around King Sejong station as an Antarctic Specially Protected Area (ASPA). Dr. Choi Jaeyong from the Korea Environment Institute assessed Korea's motivation of the assignment, saying *"the joint effort to preserve the environment of Antarctica will help improve Korea's national prestige"*.[534] The official position of the Lee government on the aim of its polar enterprise is identical with that of the previous governments. The Ministry of Foreign Affairs and Trade and the Ministry of Education, Science and Technology share the same view on the meaning of Korea's polar activity. According to them, the purpose of Korea's polar research is to enhance its national prestige in the world community by participating in the operation of Antarctica.[535]

The ROK, as the 10th largest economy in the world, has been seeking ways to expand its global political influence. Antarctica is one of the arenas where South Korea expects to flaunt its national strength[536] and its contribution to the world community, and exercise its global leadership.[537] In particular, Antarctica is an arena where Seoul is able to play a leading role in the international community by its advanced science and technology which is a non-political means.[538] Its more concrete strategy to exercise its leadership role in the international arena through its Antarctic activity has been developed since the inauguration of President Lee Myungbak, whose keynote of government administration is centred on global climate change and green growth.

6.3 Global Climate Change and South Korea's Leading Role in the New World Civilisation

[533] "김 대통령 남극세종기지 김예동 대장과 통화," ("President Kim talked to Kim Ye-dong at the King Sejong Station on the phone,") *Seoul Shinmoon*, September 8, 1996.
[534] "남극 2 곳 환경보호구역 지정된다," ("Two areas in Antarctica assigned as an Antarctic Specially Protected Area,") *Kookmin Daily*, July 15, 2005.
[535] Letter Interview with Jo Jiyi, Secretary of Division of International Law in Ministry of Foreign Affairs, April 22, 2010, and Letter Interview with Choi Doyung, Deputy Director, Division of Big Science Policy in Ministry of Education, Science and Technology April 23, 2010.
[536] Phone Interview with Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.
[537] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[538] Phone Interview with Park Sunghwa, Director for Planning and Management, PCNB, May 11, 2010.

Since President Lee took the office, the South Korean government has regarded global environment issues as its most important agenda and attempted to use the environmental phenomenon as its growth force.[539] The Lee government has been actively seeking for creative and original solutions to the global climate change and its by-products through its green growth policy.[540] Antarctica has two important roles in South Korea's dealing with the climate change issue and creating a new international norm. One is a technological basis on which the ROK is pursuing its sustainable development; the other is a symbolic meaning or justification that entitles Seoul to continue its leading role in shaping a new global structure.

Domestically, the Lee government has been developing environmental technology in order to overcome global climate change and pursue long-term quality growth. The environmental technology is divided into climate change adaptation technology and climate change reduction technology.[541] Based on the new environmental technology, the government is creating new jobs and developing new growth engines.[542] However, the domestic market is not the Lee government's ultimate goal. It has been attempting to standardise its newly-developed environmental technology and legal supporting system for the adaptation of the technology in other parts of the world. Since Korea is one of the poorest nations in natural resources, the Lee government has been investing its environmental technology and capital in developing nations which are rich in natural resources so as to actively secure permanent energy sources.[543] In order to lead a smooth transformation of the current global structure into a new norm with climate change and environmental issues at its centre, South Korea has volunteered to play a bridging role in dealing with legal obligations on climate change between developed and developing nations.[544]

To realise its ambitious long-term plan to lead a climate change-dominated global norm, the Lee government has focused on long-term and advanced technological development, and

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[539] Phone Interview with Kim Woohyun, Expert Advisor, Division of Climate Change Response, Green Growth Committee, October 27, 2010.
[540] Phone Interview with Shin Yunsung, Ambassador of Climate Change, the Ministry of Foreign Affairs and Trade, October 27, 2010.
[541] Phone Interview with Kim Woohyun, Expert Advisor, Division of Climate Change Response, Green Growth Committee, October 27, 2010.
[542] Phone Interview with Kim Hyunok, Deputy Director, Division of Climate Change Response, Green Growth Committee, October 28, 2010.
[543] Phone Interview with Kim Woohyun, Expert Advisor, Division of Climate Change Response, Green Growth Committee, October 27, 2010.
[544] Phone Interview with Shin Yunsung, Ambassador of Climate Change, the Ministry of Foreign Affairs and Trade, October 27, 2010.

diplomatic effort. Antarctic research is naturally centred on the two focal points. From a technological point of view, first of all, it is essential to secure highly advanced-environmental technology gained by research on global climate change.[545] In this sense, Antarctica has become of great value to the Lee government. The importance of Antarctica as the most optimum area for investigation on global environment change has been stressed by many Korean researchers and relevant government officials. Among them, Park Yongchul, a senior researcher at the Korea Meteorological Administration, said *"global environment change can be predicted through Antarctic research"*.[546] Likewise, Choi Seungho, the Commissioner of the Treaty Bureau of the Ministry of Foreign Affairs and Trade, stated *"the reason why we are investing a lot of resources in Antarctic research is to prepare for the global future through the Antarctic research on global environment"*.[547] In short, Korea's Antarctic research on global climate change offers a theoretical basis for developing new environmental technology for its sustainable development in the new global norm to come.[548]

Secondly, the Lee government has been actively promoting its so-called 'Climate Change Diplomacy',[549] and its increasing Antarctic research on climate change justifies the leading role of South Korea by providing a symbolic and theoretical background in addressing global climate change. In order to take the initiative in creating and leading a global environment-oriented civilisation, President Lee proclaimed in his keynote speech during the United Nations Climate Change Conference 2009 that he was going to found the Global Green Growth Institute (GGGI) to create a 'low carbon global village'.[550] The Lee government plans to expand the GGGI by opening regional offices in major cities as well as by increasing its staff by 2011. The government will also further develop the institute into an international organization by 2012 based on an intergovernmental treaty.[551] An official from the Blue

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[545] Phone Interview with Kim Woohyun, Expert Advisor, Division of Climate Change Response, Green Growth Committee, October 27, 2010.

[546] "남극점 지진계 설치 참여 박용철연구원 '남극을 보면 지구 미래가 보인다'," ("Park Yongchul who installed a seismograph in the geographic South Pole, says 'the future of the earth can be seen through Antarctica',") *Kyunghyang*, January 11, 2008.

[547] "남극세종기지의 의미," ("The meaning of the King Sejong Station,") *Dong-A Daily*, May 10, 1995.

[548] Lee Hong-gum, "The future of big science: Polar Research as a big science," *Science and Technology Policy Institute, Future Horizon Summer 2010*, 2010, p.4-5.

[549] Phone Interview with Shin Yunsung, Ambassador of Climate Change, the Ministry of Foreign Affairs and Trade, October 27, 2010.

[550] "李대통령 'GGGI, 저탄소 지구촌 싱크탱크될것'," ("President Lee says 'GGGI will play a role as a think-tank in creating a low carbon global village',") *Yeonhap News*, December 18, 2009.

[551] Presidential Council for Future and Vision, *Korea launches Global Green Growth Institute (GGGI)*, http://www.apec-

House (Office of the President) explained about the substantial implication of the launch of the GGGI that *"the GGGI holds great significance as it will be the first international organization headquartered in Korea and established under the initiative of the Korean government"*.[552] Aiming to be a leader of the new global growth paradigm, President Lee has been promoting the GGGI to major world organisations, such as the UN, OECD and World Economic Forum (WEF).[553] President Lee's initiative has been well received from outside Korea. In particular, Angel Gurria, the Secretary General of the OECD, praised President Lee, saying *"You are the father of Green Growth Strategy"*.[554] However, it is the KOPRI that sends experts and prepares for statements when the Korean government attends meetings on climate change. Therefore, Antarctic research on climate change is an essential basis for the Korean government to promote its 'Climate Change Diplomacy'.[555]

6.4 Antarctica and Global Korea

Korea is rapidly becoming a multi-cultural society. The Korean government used to promote the idea that the Koreans are a homogeneous people and encourage its people to take pride in the single blood for the sake of nation-building.[556] Realising a blind national sentiment is a great obstacle to reacting quickly to the rapidly changing globalised world, the Korean government has introduced a new national image of 'Global Korea'.[557] Instead of attempting to be a top nation separated from the rest of the world, the Lee government has aimed at turning South Korea into a 'mature nation' within the globalised world.[558] Understanding the deepening of the globalisation process and international interdependence, the ROK has taken notice of the reorganised global order and recognised the significance of global

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vc.or.kr/?p_name=information&sub_page=announcement&gotopage=2&query=view&unique_num=226, May 20, 2010.

[552] Ibid.

[553] President Lee Myung-bak, 2010 Administrative Policy Speech, http://www.tagstory.com/video/video_post.aspx?media_id=V000463709&feed=NV, October 25, 2010.

[554] "MB '원고에 없던 말 하니 통역 당황 … 몇 초 뒤 웃음 터지자 분위기 풀려'," ("President Lee talks about a funny happening relating to translation during the G20 Kyunjoo Summit,") *Joongang Daily*, October 26, 2010.

[555] Phone Interview with Choi Sunwoong, Specialist, Policy Development, KOPRI, October 27, 2010.

[556] Interview with Han Seungsoo, Prime Minister of Korea, *Arirang TV*, February 25, 2009.

[557] Phone Interview with Lee Seoktae, Manger, Bureau of Culture and Citizen, Presidential Council on National Branding, October 28, 2010.

[558] President Lee Myungbak, Keynote Speech for Global Korea 2010, http://www.globalkorea2010.kr.

partnership.[559] South Korea has positioned itself at the centre of the global partnership, bridging developed and developing nations.[560]

There are two major agendas[561] that the Korean government is seeking to address through its global partnership in order to bring the image of 'Global Korea' into relief both inside and outside Korea. The first agenda is to overcome global warming and climate change. The second one is to shape a new global economic order through green growth. The Lee government has promoted its image of global leadership in serving as a bridge between developed and developing nations at the next stage of post-Kyoto Talks. It has emphasised its unique capability of understanding the real problems of developing nations and sharing its development experience as a nation that has transitioned from the poorest nation into the chair of the G20 Summit.[562] Imprinting its image as a globally mature nation coordinating the existing environmental and economic conflict between rich and poor countries, South Korea is seeking to naturally situate itself at the centre of the rapidly globalising world. This big vision is not directly related to Seoul's economic and political interests. Rather, the promotion of 'Global Korea' is a South Korean strategic reaction to, and preparation for, political, economic, cultural and social impact generated in the process of globalisation by imprinting its new image of 'a globally mature nation' in the minds of people from inside and outside Korea.[563]

To a large extent, the government-led promotion of 'Global Korea' is reflected in its Antarctic policy. Although the key objective of ROK's Antarctic enterprise is not to prepare for the globalised world, Antarctica has been a good item through which the Korean government promotes its image of 'Global Korea' to external and domestic observers. A good example is that the ROK has invited researchers from developing nations aboard its ocean research ships and exploration vessels in order to jointly conduct Antarctic research,

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[559] Kwak Seungjun, Chairman of Presidential Council for Future and Vision, Opening Speech for Global Korea 2010, http://www.globalkorea2010.kr.
[560] Phone Interview with Shin Yunsung, Ambassador of Climate Change, the Ministry of Foreign Affairs and Trade, October 27, 2010.
[561] President Lee Myungbak, Keynote Speech for Global Korea 2010, http://www.globalkorea2010.kr.
[562] Kwak Seungjun, Chairman of Presidential Council for Future and Vision, Opening Speech for Global Korea 2010, http://www.globalkorea2010.kr.
[563] Phone Interview with Lee Seoktae, Manger, Bureau of Culture and Citizen, Presidential Council on National Branding, October 28, 2010.

hoping to be able to spread its image of ' a globally mature nation'.[564] Likewise, in public relations, the most promoted Antarctic research area by the Korean government is climate change. The Korean government has been trying to raise its people's global civic awareness by highlighting its on-going effort to deal with global issues as a mature nation in the globalised world.[565] Instead of stressing that the great Korean people are conquering Antarctica, the Korean government is putting an emphasis on its strong commitment to preserving Antarctica and finding solutions to global climate change through its scientific research in the region as a responsible and mature nation.

South Korea has been changing its social and legal systems in preparation for the globalising phenomenon. For example, the Korean parliament has recently passed a Nationality Act that adopts dual citizenship. Together with its effort to provide institutional strategies suitable for the era of globalisation, the Korean government has been trying to change the stereotypes of both domestic and external observers viewing the ROK as a closed society. The image of a closed society in domestic and foreign people's minds has harmed not only the Korean economy, but also its political influence in the world community. Hence, the Korean government has felt it necessary to have the image of Korea identified both at home and abroad as a globally open nation playing a significant role in the globalised world. Antarctic research, through which the Korean government has been promoting its contribution to doing research on climate change that affects the world community, has served Korea's needs. In short, Seoul is pursuing its global leadership in the rapidly globalising world not through winning competitions over other nations, but through being recognised as a leading nation in global partnership. Among many other global initiatives, Korea's Antarctic research has become more and more useful in promoting the image of 'Global Korea', as the globalising phenomenon is accelerating.

[564] Phone Interview with Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.
[565] Phone Interview with Jeon Seungyoul, Team Leader of Public Relations, KOPRI, October 27, 2010.

7. Conclusion

The motivations of South Korea's Antarctic activity can be divided into its scientific, economic and political interests. Those interests are closely connected to one another, reinforcing the justification of ROK's continual involvement in the region and shaping its Antarctic policy. However, it is still worth looking into each kind of interest separately in order to have a more comprehensive understanding of how ROK's Antarctic policy is shaped, and not to oversimplify the implications of its involvement in Antarctica. More importantly, it is noteworthy that South Korea's pursuing its strategic interests in Antarctica all start from its scientific research in the region. More specifically, Seoul's Antarctic policy to pursue its economic and political interests is determined according to the contents or results of its scientific research and the increasing period of its Antarctic presence for scientific activity. Obviously, science itself is not the ultimate goal of Seoul's Antarctic enterprises. The ultimate goal of the ROK is to maximise its economic and political interests through its research results and by maintaining its presence in Antarctica for a long period of time as a polar researching nation. Hence, in order to understand the reasons behind South Korea's increased involvement in Antarctica and the prospect for its Antarctic policy, this has to be preceded by an understanding of its major research areas, research achievements, and the implications of its scientific accomplishments.

What are the scientific interests of Seoul's Antarctic research?

Seoul has set seven major topics of its Antarctic research project[566]: Paleoclimatic Change, Ozone Layer and Upper Atmosphere, Marine Ecosystem and Environmental Change, Physical Oceanography and Chemical Flux, Terrestrial Geology and Environment, Biological Sciences, and Marine Geology in Antarctica. It has divided the project into six categories. First, in the category of GeoScience, it does research on polar rocks, and geological and geographical features, and investigates Antarctic meteorite and interstellar matter. The second category is BioScience where it studies: structure and function of the polar ecosystem; phylogeny, evolution and biodiversity of polar creatures; and life phenomenon of polar creatures. Thirdly, in the category of OceanoScience, it investigates: interactions between sea ice, atmosphere and ocean in the Polar Regions; and interactions between Antarctic icebergs

[566] http://www.kopri.re.kr/index_eng.jsp.

and the earth system. Research on reconstruction of paleoenvironments by utilizing polar icebergs and seabed deposits, and research on frozen land in the Polar Regions is conducted in the category of Paleo/CryoScience. The fifth category is CosmoScience in which it examines the upper atmosphere, space environment and satellite science in the Polar Regions. Lastly, it builds databases on the Polar Regions in the category of InfoScience.

The results and duration of the scientific research based on the Antarctic research project determines the way South Korea pursues its economic and political interests in Antarctica.

What are the economic interests of Seoul's Antarctic enterprise?

From an economic perspective, the greatest economic interest of South Korea is in Antarctic resources. Its interest in the resources in the region has been embodied through its 'scientific research' on energy resources such as crude petroleum and methane hydrate, and on marine products such as Antarctic krill in the name of GeoScience and BioScience. As other researching nations in Antarctica, the ROK has been cautious with terms such as 'resources development' or 'resources exploration' under the current Antarctic Treaty System. However, it has continued its effort to locate resources and make more accurate maps of Antarctic resources distribution in preparation for the scheduled review of the Protocol on Environmental Protection in 2048. In addition to research results, the duration of Seoul's presence in Antarctica as a researching nation also affects its economic interests. Having learned the lesson from its deep seabed mining ventures, South Korea expects to win a vested right to resources exploitation as an initiating research nation when Antarctica begins to be developed in earnest.

Another economic effect Seoul is seeking for from its basic polar science is the accumulation of fundamental technology through which it will transform its economy from a traditional manufacturing-based economy into a knowledge economy. Faced with limitations of its traditional economic paradigm, the ROK has attempted to adopt a knowledge economy with science at the centre of it, expecting innovation and improvement of productivity from science. In this vision, Seoul has dramatically increased its R&D investment in scientific areas from which it could secure fundamental technologies. As an optimum place for carrying out all pure sciences, Antarctica has been expected to serve Seoul's needs for transformation

of its economy by accumulating fundamental technologies from its Antarctic research. South Korea expects the fundamental scientific knowledge and technology obtained from its pure science to be the basis of its future economic development. Biotechnology, which is a key scientific field of Korea's Antarctic research, is one of the areas that the Lee government is concentrating its efforts on as its future growth engine. It is seeking to patent and industrialise the scientific knowledge gained from its biotechnology study. In addition to the economic effect as pure science, Korea's polar exploration, as one of the key disciplines in its big science, is expected to generate a substantial ripple effect into many scientific and industrial sectors.

The ROK has strived to reduce so-called "Korea Discount" and maximise the value of its small and medium enterprises, and their products and services by improving the image of the national brand. It expects that its presence in Antarctica and scientific research will promote its contribution to the world community, in terms of finding solutions to global environmental issues, and its advanced science and technology, which are key determinants for a nation's brand value. In addition to the three economic aspects of Antarctica, Seoul is also seeking for more concrete and practical ways to relate its Antarctic enterprise to its industrial development. In other words, its Antarctic research is not absolute pure scientific study, but preliminary research upon which its domestic industries grow. For example, South Korea has developed underground and underwater exploration equipment for its Antarctic research. The equipment has been used for its location-based services and military defence-related industries. Similarly, its biotechnology research in Antarctica has been conducted with an objective of boosting its pharmaceutical and medical industries, cosmetic, and energy industries. There are many other domestic industries that the ROK attempts to boost through its Antarctic research. It predicts that its aviation and electronics industries will be benefited from its space observation in the Polar Regions, while its Earth observation is expected to support its disaster and weather information services for agriculture and fishing, and maritime information services for safe seaways, and many other industries, by providing climate and weather information.

As a matter of fact, the experience of establishing its polar infrastructure shows higher and more direct connectivity with the enhancement of its domestic industries than its scientific research in the regions. Two major beneficiaries are the construction and ship building

industries. The accumulated technology of freezing land engineering and ultra-cold engineering, and knowhow of operating construction equipment in an intense cold land will have a ripple effect on its wind resistant building design and heat-conservation material, which will ultimately lead to the technological development of South Korea's construction and its related industries.
In the case of the ship building industry, Seoul expects the construction of *Araon* will revitalize this industry, especially in winning contracts for its special ship building. Consequently, the ship building-related industries such as steel and paint and interior design business will develop in sales and technology. Lastly, the construction of ice breaking vessels will have a flow-on effect on winning a contract for the construction of steel buildings and offshore plants in the Polar Regions.

What is the role of Antarctica in Korea's domestic politics?

The ROK's Antarctic enterprise has been politicised in domestic politics in order to strengthen the position of each government or has served as a supplement to the keynote policy of each government. During the late President Park's term, greater restrictions were imposed on South Korean vessels fishing in the northern oceans by the US as well as the Soviet Union. Seoul began turning its attention to the Antarctic Ocean as part of its effort to deal with its immediate poverty. Right before the indirect election for his fifth consecutive term, being called 'dictator', 'communist' and 'pro-Japanese' by the South, the US and the North respectively, President Park actively promoted the Antarctic enterprise. He stirred up the people's nationalistic sentiment by relating the enterprise with the national traits of the Koreans. After Park's assassination, President Jun seized power through a military coup. With a lot of criticisms from both inside and outside Korea, the Jun administration adopted every possible means to show what the government is capable of in terms of its diplomatic strength as a legitimate administration. Thanks to the Jun government's effort to justify its legitimacy through the Antarctic policy, the ROK was able to join the Antarctic Treaty and construct its first Antarctic station.

The most important agenda of the Roh Tae-woo administration was the Nordpolitik that would subordinate the North to the South in the official name of 'Open the North' by separating and isolating Pyongyang from its allies. Seoul's Antarctic policy served as a non-

political tool to establish diplomatic ties with the Soviet Union and China, and to indirectly put North Korea under pressure to open up. Likewise, Seoul's Antarctic policy was shaped to enhance the idea of "*segyehwa"* promoted by the Kim Yung-sam administration. Under bilateral and multilateral pressure, South Korea had suffered from raised trade barriers against its rather closed economy. Realising the inevitability of limitless competition in the rapidly globalising world, the Kim administration adopted "*segyehwa"* as its survival strategy to be an influential nation in the world community. In particular, the Kim government noted the importance of a nation's ability to give its voice on global agendas. Witnessing many emerging nations, similar to the ROK, fail to join the ranks of developed nations because of their weak voice in the international arena despite their rapid economic development, the Kim government's "*segyehwa"* took the initiative in addressing global environmental issues. In support of the "*segyehwa"* which focused on securing its presence in the world community by being a leading nation on global environmental preservation, Seoul criticised the weak environmental regulations of the Antarctic Treaty System and urged the consultative members to follow its exemplary initiative in establishing a domestic Antarctic law.

President Kim Dae-jung took office in the middle of the Asian Economic Crisis of 1997. The top priority of the Kim administration was to repay the debt from the IMF as soon as possible by boosting its exports and tightening the government's budget in the areas which were not expected to produce immediate results beneficial to the Korean economy. As a result, the Antarctic enterprise became neglected. Even after repaying the loan from the IMF in full, the leftist government's priority was not its Antarctic business, but the policy to improve its relationship with North Korea. President Kim's successor, President Roh Moo-hyun, was expected to follow the same keynote of government administration, focussing on short-term economic growth and succession of so called "sunshine policy" toward North Korea. According to this expected keynote of the Roh government, the Antarctic enterprise was expected to continue being neglected. However, the expectation turned out to be wrong. Being a populist politician, President Roh had no choice but to increase the investment in, and commitment to, the Antarctic business in order to win back the people's minds that turned against the leftist government after the death of a Korean researcher in Antarctica. Learning about the poor researching conditions of the King Sejong Station and the government's lack of commitment to the Antarctic research, the Korean citizens and many civil groups urged the government to treat the death of the researcher with exceptional respect.

Thanks to President Roh's populist response to the public demand, there was considerable progress in the infrastructural development of Korea's Antarctic enterprise.

What is the role of Antarctica in Korea's international politics?

There have been two official objectives in terms of international politics throughout the history of the Korean Antarctic activity, regardless of the governments. One objective is to maintain and negotiate its Antarctic presence and voice on Antarctic affairs. More specifically, Seoul's Antarctic activity is aimed at securing its right to sovereignty and resources exploitation. The other objective is to take on leadership and exercise more influence in the international political arena. It seeks to improve its international political status by actively participating in world organisations such as the Antarctic Treaty System. Unlike the other administrations, however, the Antarctic policy of the current Lee Myung-bak government is not clearly divided into domestic and international purposes. Since his national vision is "green growth" adopted in the aftermath of global environmental issues such as climate change and exhaustion of fossil fuels, which is threatening not only South Korea but also the whole world community, the Korean Antarctic policy serving the national vision combines domestic and international political elements. Its Antarctic research is serving as a theoretical basis to foster its green technology and green industry, and as a justification for its 'Climate Change Diplomacy'. Its scientific research on climate change in Antarctica is expected to assist the development of climate change adaptation technology and climate change reduction technology. The Lee government has been attempting to standardise its newly-developed environmental technology and legal supporting system for the adaptation of the technology in other parts of the world. Secondly, its presence in Antarctica and effort to study climate change has entitled Seoul to continue its leading role in shaping a new global structure through its 'Climate Change Diplomacy'. In this sense, ROK's Antarctic research could be interpreted as a symbolic gesture of its effort and eagerness to lead a global environment-oriented civilisation.

Another political objective for the Lee government's Antarctic enterprise is to promote the image of 'Global Korea' to both internal and external observers. The government has emphasised its bridging role between developing and developed nations in dealing with global economic and environmental issues. By inviting developing nations to its Antarctic

project and contributing to the prosperity of the world community through its Antarctic research on global environmental issues, South Korea is seeking to imprint its new image of 'a globally mature nation' in the minds of people from inside and outside Korea.

The prospect for the future Antarctic policy of South Korea

Despite its ambitious plans and increasing experience in Antarctica, however, the prospect for South Korea's strategic interests in Antarctica is not absolutely rosy.
The absence of a central organisation, although there are various bodies involved in South Korea's Antarctic enterprise, hinders Seoul from pursuing its scientific, economic and political interests in Antarctica in a more integrated way. The scattered Antarctic organisations with different aims seem to have an insufficient understanding of the real potential and diverse values of Antarctica. In particular, their lack of expertise in general Antarctic matters makes them heavily depend on the KOPRI. However, the KOPRI is more like a scientific research institute in nature than an integrated policy-making organisation. Most members of the KOPRI are actual scientists who are not aware of Seoul's varied strategic interests in Antarctica.[567] Although the KOPRI is operating its own Department of Strategy and Policy, the Department does not represent the integrated vision of the ROK's Antarctic enterprise. It usually makes its own plans on the operation of its polar infrastructure or the organisation by itself. All relevant Ministries and organisations rely on the KOPRI for their lack of expertise in Antarctica. However, the KOPRI seriously lacks staff from a social and political science background.[568] Although the KOPRI realised years ago the importance and necessity of multidisciplinary approaches to Antarctica, there have been very few changes in the way it carries out its Antarctic research.

Nevertheless, pursuing its strategic interests in Antarctica has already become a norm of the Korean society. It is obvious that Seoul's Antarctic enterprise is unlikely to retrogress, although the progress it will make may slow down from time to time, due to the absence of

[567] In a phone interview on August 17, 2010, Mr. Huh Soondo, Principal researcher in Department of Polar Earth-System Science in KOPRI, said "all we do in Korean polar research is to merely contribute to world prosperity through scientific research...we scientists have no idea as to the economic or political value (of polar research)." In another interview on August 17, 2010, Mr. Park Hyun, Senior researcher in Department of Life Sciences in KOPRI, said "we scientists have no idea as to any possible relation between our (polar) research and its application to industry."
[568] See the staff and their major, KOPRI, http://www.kopri.re.kr/index_eng.

an integrated central body as well as external reasons. The prospect for South Korea's polar ambitions might be bright, if it succeeds in increasing its efficiency through a reorganisation of its polar bodies, and a comprehensive understanding of the Polar Regions through multidisciplinary approaches.

Reference List

AFOPS, "AFOPS Short History for COMNAP-EXCOM,", 2004, http://afops.org/documents.html.

AFOPS, http://afops.org/terms%20of%20reference.html.

Ahn In-yung, "Some Ecological and Physiological Features of the Antarctic Clam, Laternula elliptica (King and Broderip) in a Nearshore Habitat on King George Island," *KORDI, Ocean and Polar Research* Vol.23, No.4, 2001, pp.419-424.

Arirang TV Interview with Han Seungsoo, Prime Minister of Korea, *Arirang TV*, February 25, 2009.

Asia Today "李대통령 '녹색성장, 환경운동 아니다'," ("President Lee says 'Green Growth is not an environmental campaign',") *Asia Today*, February 16, 2009.

Cabinet Office, 2003, http://contents.archives.go.kr/next/content/listSubjectDescription.do?id=000845&pageFlag=.

China-Korea Joint Ocean Research Centre, http://www.ckjorc.org/ka/view.asp?id=452,

Choi Byun-gak, *Development of classification system for Antarctic meteorites*, Seoul: Seoul National University, 2009.

Choi Jae-won, "Applications of High Resolution Mass Spectrometer for the Multi-residual Measurement 1. organophosphorous Pesticides Group-2,"*The Korean Society for Environmental Analysis* Vol.11, No.1, 2008, pp.55-65.

Choi Moon-yung., *Geological Evolution and Processes of Antarctica*, Ahnsan: KORDI, 2001.

Choi Sung-Doo, "International Ocean Issues and Policy Regime," *Journal of the Korean Society of Marine Environment and Safety* Vol.12, No.2, 2006, pp.115-123.

Chosun Daily "5.18 사건 재수사 종결,내일 기소," ("The end of the reinvestigation on the 5.18 Incident, tomorrow under indictment,") *Chosun Daily*, January 22, 1996.

Department of Basic Research, Ministry of Education, Science and Technology, *Enhance the Antarctic Research,* Seoul, 2006.

Department of Culture Policy, Seoul City, *2010 Culture and Art Programmes offered by Seoul City,* Seoul, December 27, 2009.

Department of Ocean Deveolpment No.3148-6535, Ministry of Land, Transport and Maritime Affairs , *Extraction of New Substances from Polar Organisms and High Value Products,* Seoul, 2002.

Department of Ocean Deveolpment No.3148-6535, Ministry of Land, Transport and Maritime Affairs, *Extraction of New Substances from Polar Organisms and High Value Products*, Seoul, 2002.

Department of Policy Coordination, Ministry of Education, Science and Technology, *President Lee chairs the 28th meeting of the Nation's Science and Technology Committee*, Seoul, August 12, 2008.

Department of Science and Technology Policy, Ministry of Education, Science and Technology, *Commercialising Industry for Large-scale Wig Ship*, Seoul, 2005, pp.1-3.

Dong-A Daily "'남극 조난사고' 전재규 대원 영결식," ("The send off ceremony of Jun Jaekyu,") *Dong-A Daily*, December 17, 2003.

Dong-A Daily "11 월 16 일 출발예정 우리나라 척 남극탐사," (" Korea's first Antarctic expedition is scheduled for the 16th of November,") *Dong-A Daily*, March 7, 1984.

Dong-A Daily "2007 남북정상회담 / 두차례 회담 대화 내용," ("The 2007 South and North Korea Summit,") *Dong-A Daily*, October 4, 2007.

Dong-A Daily "경제통상외교 주력 외무부 업무보고," ("The Ministry of Foreign Affairs reports its plan to focus on diplomacy for trade,") *Dong-A Daily*, January 22, 1986.

Dong-A Daily "故전재규씨 국립묘지 안장 검토…盧대통령 지시로 재논의," ("President Roh instructed the Chief Presidential Secretary to review the issue of Jun Jaekyu's burial in the National Cemetery ,") *Dong-A Daily*, December 15, 2003.

Dong-A Daily "과기처 보고개발사업 파격적 특혜," ("The Ministry of Science and Technology reporting exceptional favour for the development enterprises,') *Dong-A Daily*, January 28, 1991.

Dong-A Daily "과학 / 극지 과학기술 세미나 개최," ("A seminar on Polar Science and Technology is scheduled to be held,") *Dong-A Daily*, June 14, 2001.

Dong-A Daily "김일성 사망," ("Kim Il-sung died,") *Dong-A Daily*, 1994-07-10.

Dong-A Daily "남극 「제 2 과학기지」 만든다/연구자원 선점위해 추진/해양부," ("The Ministry of Maritime Affairs and Fisheries building the second Antarctic base to preoccupy research and resources,") *Dong-A Daily*, September 6, 1996.

Dong-A Daily "남극기지 건설준비 한창," ("The preparation for the construction of the Antarctic station is at its peak,") *Dong-A Daily*, July 9, 1987.

Dong-A Daily "남극기지 내년 2 월 건설," ("The Antarctic base is scheduled to be completed next February,") *Dong-A Daily*, May 14, 1987.

Dong-A Daily "남극세종기지의 의미," ("The meaning of the King Sejong Station,") *Dong-A Daily*, May 10, 1995.

Dong-A Daily "남극에 제 2 기지 만든다," ("The second Antarctic base is going to be built,") *Dong-A Daily*, June 25, 2002.

Dong-A Daily "남극연구 상호협력 한소 합의각서 교환," ("An agreement on Antarctic research cooperation between Korea and the Soviet Union,") *Dong-A Daily*, July 16, 1990.

Dong-A Daily "남극조약 가입 등 본격 추진," ("The government attempts to join the Antarctic Treaty,") *Dong-A Daily*, March 9, 1983.

Dong-A Daily "남극조약 가입추진," ("The attempt to join the Antarctic Treaty,") *Dong-A Daily*, March 11, 1978.

Dong-A Daily "남극조약 당사국 5 월 서울서 회의," ("ATCM is scheduled to be held in Seoul in May,") *Dong-A Daily*, March 23, 1995.

Dong-A Daily "남극탐험대원 초치," ("The members of the Antarctic expedition invited to Chungwadae ,") *Dong-A Daily*, December 20, 1985.

Dong-A Daily "남극특집 5 편 제작 양 TV," ("The two Korean television stations produce five special documentary films on Antarctica,") *Dong-A Daily*, October 1, 1987.

Dong-A Daily "남빙양 향한 만선 꿈, 수산한국 새 장 여는 남북호," ("Dreaming of returning with a full load of fish, *Nambookho* opens Korea's new fisheries,") *Dong-A Daily*, December 8, 1978.

Dong-A Daily "남빙양의 황금을 낚는다," ("Fishing for gold in the Antarctic Ocean,") *Dong-A Daily*, November 28, 1981.

Dong-A Daily "바다의 날 / '바다의 황금' 항만산업을 키워라," ("Develop the port

industry, the gold of the ocean,") *Dong-A Daily*, May 31, 2001.

Dong-A Daily "브라질,수리남, 칠레 3 국과 어업협정 곧 체결," ("The government is about to sign a fisheries agreement with Brazil, Chile and Surinam,") *Dong-A Daily*, May 20, 1981.

Dong-A Daily "새 어장 찾아나선 원양어업," ("The deep-sea fishing industry is looking for new fisheries,") *Dong-A Daily*, August 19, 1981.

Dong-A Daily "소에 북양어업한국측 입장전달," ("Advising the Soviet Union about the Korean position on the north-sea fisheries,") *Dong-A Daily*, December 27, 1976.

Dong-A Daily "義死 故 전재규-심경철씨 대전현충원에 안장하기로," ("The body of Jun Jaekyu to be transferred to the National Cemetery,") *Dong-A Daily*, October 12, 2007.

Dong-A Daily "정부, 故전재규대원에 국민훈장 추서," ("The government awarding the National Medal of Seokryujang to Jun Jaekyu,") *Dong-A Daily*, December 12, 2003.

Dong-A Daily "한국탐험대 남극을 간다," ("The Korean expedition goes to Antarctica,") *Dong-A Daily*, July 19, 1985.

Dong-A Daily "한-칠레 '두 MB' 정상 "녹색성장 협력"…미첼 바첼레트 이니셜도 MB," ("The summits of Korea and Chile cooperates for 'green growth'," *Dong-A Daily*, November 12, 2009.

Dong-A Daily "해양부 업무보고/'韓-中 어업협정 연내 체결'," ("Ministry of Maritime Affairs and Fisheries plans to sign a fisheries agreement with China within the year,") *Dong-A Daily*, May 5, 2000.

Dong-A Daily "홍보의 불균형," ("The imbalance of public relations,") *Dong-A Daily*, May 24, 1984.

Dong-A Daily Kim Yedong, the Head of Antarctic Continental Station Construction Committee of KOPRI, " [초대석]남극서 귀환 김예동 대륙기지추진위원장," ("Kim Yedong returns from Antarctica,") *Dong-A Daily*, February 24, 2010.

Dong-A Daily, Interview with Yun Seoksoon, Captain of the Antarctic Expedition, "남극 상설기지설치 급해요," ("It is urgent to build a permanent base in Antarctica,") *Dong-A Daily*, December 18, 1985.

Dong-A Daily, the Hankurye, the Chosun Daily and the Moonhwa Daily, This advertisement was shown on the first page of *the Dong-A Daily, the Hankurye, the Chosun Daily and the Moonhwa Daily* on December 7, 2002.

Dong-A Daily 법사,외무,내무,재무위 질의답변 요지 '삼보사건 권력과 관계없다'," ("The Legislation-Judiciary Committee, the Foreign Affairs Committee, the Home Affairs Committee and the financial affairs Committee summarised that the Sambo scandal has nothing to do with political influence,") *Dong-A Daily*, April 27, 1983.

EDaily "칠레 지진 여파, `1 박 2 일` 남극행 잠정 유보," ("The earthquake in Chile holds 'One Day Two Nights' suspended from its trip to Antarctica,"), *EDaily*, March 2, 2010.

Goryungjinongupyungooso, *2008 Experimental Research*, Pyungchang: Rural Development Administration, 2008.

Government Information Agency, *Roh Government's Five Years Policy Promotion White Paper*, Seoul, 2008.

Government Information Agency, *The Sixth Republic of Korea (2),*Seoul, 1992.

Gwagusa Jinsangkyumyung Wiwonhoi, *A Report on 12/12, 5/17, 5/18 Incidents*, Seoul: Ministry of National Defence, 2007.

Ha Tae-yul, "Antioxidant Activity and Contents of Bioactive Components in Polar

Microalgae," *KORDI, Ocean and Polar Research* Vol.28, No.1, 2006, pp.37-43.

Han Heung-soo, *The dynamics of Korean politics*, Seoul: Orum, 1996.

Han Jang-mi, "The Changing Temperature of the O-Chondrites Collected in Korea's First and Second Antarctic Meteor Expeditions," *The Journal of the Geological Society of Korea* Vol. 45, No.2, 2009, pp.157-171.

Han Kyurye "고 전재규 연구원 국립묘지 안장을'," ("Jun Jaekyu's burial in the National Cemetery,") *Han Kyurye*, December 16, 2003.

Han Kyurye "남극 '펭귄 마을' 한국이 지킨다," ("Korea preserves *'Penguin Village'* in Antarctica,") *Han Kyurye*, April 19, 2009.

Han Kyurye "남극 본토진입 급한데...," ("It's urgent to enter into the Antarctic continent…,") *Han Kyurye*, July 12, 2000.

Han Kyurye "이명박 대통령 당선/ 경제도 교육도 '시장 자율'…신자유주의 가속화할 듯," ("Lee Myung-bak elected President of Korea/ 'free market'…neoliberalism accelerates,") *Han Kyurye*, December 20, 2007.

Han Kyurye "자원과 순수의 대륙 다시 '남극속으로'," ("Let's go into the Antarctic continent with resources,") *Han Kyurye*, June 26, 2001.

Han Sang-bum, President of Presidential Truth Commission on Suspicious Deaths. "박정희-전두환-노태우는 일본 우익 거두 세지마의 충복들" ("Park Chunghee, Jun Du-hwan and Roh Tae-woo were loyal servants to Sejima Ryujo,") *Daily Surprise*, December 12, 2005.

Hangyurye "80 년대초 국내서 플루토늄 추출," (Korea extracts plutonium in the early 80s,") *Hangyurye*, September 9, 2004.

Hankook Daily "8·15 경축사/ 불도저식 '7·4·7' 내리고 '지속가능 녹색성장' 새 깃발," ("President Lee's message during the National Liberation Celebrations in 2008/sustainable green growth,") *Hankook Daily*, August 16, 2008.

Hankook Daily "盧대통령 탄핵안 가결/심리착수…… 쟁점과 전망," ("The prospect for the impeachment of President Roh ,") *Hankook Daily*, March 13, 2004.

Hankook Daily "녹색성장 선언 1 년/ <하> 나눔까지 생각하는, 진정한 저탄소 사회로," ("The first anniversary of the declaration of green growth/ towards a true low carbon society,") *Hankook Daily*, August 17, 2009.

Hankook Daily "의사자 위한 국립묘지 검토," ("Reviewing Jun Jaekyu's burial in the National Cemetery,") *Hankook Daily*, December 17, 2003.

Hankook Daily "탄핵기각 노무현 대통령 직무복귀," ("The case of the impeachment dismissed, President Roh comes back to office,") *Hankook Daily*, May 15, 2004.

Hankook Daily "한·칠레 남극 협력 확인/김 대통령,세종기지와 통화," ("Confirming Korea-Chile Antarctic cooperation, President Kim made a phone call to the King Sejong Station,") *Hankook Daily*, September 8, 1996.

High-tech Information Analysis Institute, *New growth force industries and business strategy*, Seoul: Jinhan MNB, 2009.

Hong Jong-kook, "Distribution of gas hydrates off northern Antarctic Peninsula," *2007 Spring Meeting of the Korean Society for New and Renewable Energy, Seoul, 2007* (Seoul: KSNRE, 2007).

Hong Jong-kook, "Tectonic features along the South Scotia Ridge, Antarctica," *2005 Thesis Collection, Korean Society of Earth and Exploration Geophysicists*, 2005, pp.139-144.

Hong Sung-min, "Glacier Exploration on the Antarctic Continent," Gwahakgwa Gisool No.

452. 2006. pp.50-53.

Hong Yu-soo, “Knowledge-based economy and the future of Asia,” *Science and Technology Policy Institute, Kwahak Kisool Jungchaek* Vol.17, No.6, 2007, pp.1-4.

Hwang Suk-won, “Economic Assessment of Manganese Nodules Mining,” *Journal of the Korean Society of Oceanography* Vol.13, No.3, 2008, pp.260-270.

Hyung Kisung, Principal Researcher of Deep-sea & Marine Georesources Research Department, Korea Ocean Research & Development Institute, “[해양시대가 열린다]태평양 '망간단괴' 개발광구,”(“Ocean time comes: development mine lot for the Pacific manganese nodule ,”) *Hankook Daily*, April 22, 2007.

Jang, Soon-gun, Captain of the 8th Winter Research, “The Antarctic Continent and Korea’s Antarctic Research,” *Gwahak Sasang*, No.34, 2000, pp.184-199.

Jang, Soon-gun, Captain of the 8th Winter Research, *The Dream of Antarctic Exploration*, Seoul: Science Books, 2004.

Ji Byung-moon, *New recognition of modern Korean politics*, (Seoul: Parkyungsa, 2001).

Ji Chul-gun, Chairman of the Korean-Japanese Fishery Committee, “업역어업과 국제적 문제,” (“Pelagic fishery and international issues,”) *Dong-A Daily*, September 13, 1966.

Jin Yung-kun, “Interpretation of Gravity, Magnetic and High-resolution (3.5 kHz) Seismic Data in the Powell Basin, Antarctica,” *Korean Society of Earth and Exploration Geophysicists, Jigu Mooli* Vol.7, No.1, 2004, pp.1-10.

Joongang Daily “MB ‘원고에 없던 말 하니 통역 당황 … 몇 초 뒤 웃음 터지자 분위기 풀려’,” (“President Lee talks about a funny happening relating to translation during the G20 Kyunjoo Summit,”) *Joongang Daily*, October 26, 2010.

Jun Jae-sung, *A study on the determinant factor of Roh Tae-woo government's Nordpolitik and its changes*, Seoul: Seoul National University, 2003.

Jung Dae-kyo., "The Domestic and Overseas Paleoclimate Studies through Deposits from Lakes or Swamps," 2008. Jijilhakhoiji Vol. 44. No.1, February 2008, pp.81-92.
Jung Ho-sung, Principal Researcher, Division of Polar Life Science, KOPRI, "2005 experience of Antarctica," 2006,
http://cafe.naver.com/poletopole2.cafe?iframe_url=/ArticleRead.nhn%3Farticleid=1701.

Jung Jong-hwan, the Minister of Land, Transport and Maritime Affairs, "기고 / '무한 영토' 바다를 개척하자," "Develop the ocean, a limitless territory,") *Dong-A Daily*, June 1, 2009.

Jung Yong-kyun, "The Role Of SME's for the Job Creation during the Period from 1990 to 2006," *Korean Academy of Human Resource Management, Injuk Jawon Kwalli Yungoo* Vol. 15, No.4, 2008, pp.229~243.

Jungang Daily "실록 박정희시대(30), 자위에서 자주로," ("The annals of the Park's time, from self-defence to self-reliant defence,") *Jungang Daily*, November 2, 1997.

Kang Don-hyuk, "Acoustic Estimate of the Krill (Euphausia superba) Density between South Shetland Islands and South Orkney Islands, Antarctica, During 2002/2003 Austral Summer," *KORDI, Ocean and Polar Research* Vol.27, No.1, 2005, pp.75-86.

Kang Ryang, "A Study on International Environmental Regime ;The Case of the Antarctic Treaty System," *KORDI, Ocean and Polar Research* Vol.28, No.2, 2006, pp.163-173.

Kang Sung-ho, "Cryobiological Perspectives on the Cold Adaptation of Polar Organisms," *KORDI, Ocean and Polar Research* Vol.29, No.3, 2007, pp.263-271.

Kang Sung-ho, "지금, 북극 다산기지에서는 :마지막 남은 인류 자원의 보고 '북극'," ("Now, the Dasan Station: the Arctic, the Last Repository of Resources,"), Gwahakqwa Gisul, No.452, 2007, pp.70-73.

Kang Yung-chul, *Development of Korean Antarctic Research Information System*, Ahnsan: KORDI, 2001.

Kang Yung-chul, *Oceanographic Studies on Antarctic Marine Living Resources and Ecosystems*, Ahnsan: KORDI, 2002.

Kim Bo-yung, "A Study on the Climate Change and the Policy of Natural Gas Exploitation on the Arctic Region," *Journal of the Korean Resource Economics Association* Vol.18, No.4, 2009, pp.787-815.

Kim Chan-woo, Officer of Environment and Science, Ministry of Foreign Affairs and Trade, "내일을 위한 환경외교펼칩니다,"("The Environmental Diplomacy for Tomorrow,"), *Hwankung Daily*, July 6, 2007.

Kim Chan-woo, *The 21st Environmental Diplomacy*, Seoul: Sangsang Communication, 2006.

Kim Dae-hwan, Dean of School of Commerce, Inha University, "Knowledge-based economy and vicious circle of the gulf between rich and poor," *Yungnam Daily*, February 9, 2004.

Kim Dal-jung, *Korea's Diplomacy*, Seoul: Orum, 1998.

Kim Doo-nam, "Distribution of Patagonian toothfish(Dissostichus eleginoides) by bottom longliner in the southeastern Atlantic Ocean," *Journal of the Korean Society of Fisheries Technology* Vol.44, No.4, 2008, pp.304-311.

Kim Ji-hee, "Distribution Pattern of Deschampsia antarctica, a Flowering Plant Newly Colonized around King Sejong Station in Antarctica," *KORDI, Ocean and Polar Research* Vol.26, No.1, 2004, pp.23-32.

Kim Jinhyun, the Minister of Science and Technology, "남극개발은 도약의 상징," ("The Antarctic development is a symbol of our takeoff,") *Dong-A Daily*, January 27, 1993.

Kim Jung-chan. “Korea’s Research on Paleoclimate and Paleoocean: the General Outlook and Future Research Direcetion,”, Jijilhakhoiji Vol. 44. No.1, February 2008, pp.1-4.

Kim Jung-hoon, “Nest Distribution of Skuas on Barton and Weaver Peninsulas of the King George Island, the Antarctic,” *KORDI, Ocean and Polar Research* Vol.27, No.4, 2005, pp. 443-450.

Kim Ki-hyun, “The future and value of abyssalbenthic mineral resources,” *Journal of the Ocean Culture Foundation* No.14, 2006, pp.185-191.

Kim Kyung-ja, “Development of new technique to trace active landscape change using multiple cosmogonic nuclides,” *The Journal of Korea Institute of Geoscience and Mineral Resources*, 2008, pp.15-36.

Kim Samuel.S., *The International Relations of Northeast Asia*, Lanham: Rowman &Littlefield Publishers 2004.

Kim Sung-chul, “Dynamics of diplomacy in environment, system and effect: *Nordpolitik* ,” *The Korean Association of International Studies, Kookje Jungchi Nonchong* Vol.4, No.3, 2000, pp. 81-99.

Kim Ye-dong, *Annual Report of Environmental Monitoring on Human Impacts at the King Sejong Station*, Ahnsan: KORDI, 1998.

Kim Yong-ha, *Observation of upper atmospheric phenomena and study on their wave nature in the Arctic and Antarctic regions*, Choongnam: Choongnam University, 2009.

Kim Yung-sang, *Studies on the Development of Separative Concentration Techniques and Atomic Spectroscopic Methods for the Determination of Ultra-trace Elements*, Seoul: Korea University, 2002.

Kookmin Daily “[국민일보 남극을 가다] (7) 지원없는 한국대원 '축제 외톨이',”

(“Lacking government support, Korean researchers can’t join the festival,”) *Kookmin Daily*, May 15, 1999.

Kookmin Daily “남극 2 곳 환경보호구역 지정된다,” (“Two areas in Antarctica assigned as an Antarctic Specially Protected Area,”) *Kookmin Daily*, July 15, 2005.

Kookmin Daily “남극 세종기지 기상청 직원운용 마찰,” (“A problem in dispatching a KMA researcher to the King Sejong Station,”) *Kookmin Daily*, December 2, 2002.

Kookmin Daily “李—盧 반미 표심잡기 경쟁,” (“Two presidential candidates compete to win votes by manipulating the anti-American sentiment,”) *Kookmin Daily*, December 9, 2002.

Kookmin Daily “정부 ‘저탄소 녹색성장’ 청사진 마련… 생활속 녹색혁명 통한 선진국 도약,” (“The government suggesting a blueprint for ‘low carbon green growth’…… joining the ranks of developed nations through green revolution,”) *Kookmin Daily*, February 17, 2009.

Kookmin Daily “조난사고 4 일째—현지 상황·정부대책 / “모두 남겠다”…세종기지 정상화,” (“Four days after the accident-the current situations and follow-up measures of the government/ the King Sejong Station being normalised,”) *Kookmin Daily*, December 11, 2003.

KOPRI, http://blog.kopri.re.kr/www/research/outcome_2008/outcome_2008_2nd/outcome_2008_2nd.cms.

KOPRI, http://blog.kopri.re.kr/www/research/prior_overview/prior_09/prior_09.cms.

KOPRI, http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_earth/antarcticnearth_earth_role/antarcticnearth_earth_role.cms.

KOPRI, http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_ecosystem/antarcticnearth_

ecosystem_resource/antarcticnearth_ecosystem_resource.cms.

KOPRI,
http://www.kopri.re.kr/eBook/antarcticnearth/antarcticnearth_politics/antarcticnearth_politics_history/antarcticnearth_politics_history.cms.

KOPRI, http://www.kopri.re.kr/index.jsp.

KOPRI,
http://www.kopri.re.kr/infra/araon/araon_about/araon_about_icebreaker/araon_about_icebreaker.cms.

KOPRI,
http://www.kopri.re.kr/infra/araon/araon_about/araon_about_kopri_icebreaker/araon_about_kopri_icebreaker.cms.

KOPRI, http://www.kopri.re.kr/infra/continental/continental_about/continental_about.cms.

KOPRI,
http://www.kopri.re.kr/infra/dasan/dasan_about/dasan_about_facility/dasan_about_facility.cms.

KOPRI,
http://www.kopri.re.kr/infra/kingsejong/kingsejong_about/kingsejong_about_facility01/kingsejong_about_facility01.cms.

KOPRI, http://www.kopri.re.kr/researchdep/biocenter/biocenter_info/biocenter_info.cms.

KOPRI, http://www.kopri.re.kr/www/about/kopri_history/kopri_history.cms.

KOPRI, http://www.kopri.re.kr/www/about/kopri_vision/kopri_vision.cms.

KOPRI,
http://www.kopri.re.kr/www/koprizone/notice/userBbs/bbsView.do?bbs_cd_n=13&bbs_seq_

n=448.

KOPRI,
http://www.kopri.re.kr/www/research/outcome_2008/outcome_2008_1st/outcome_2008_1st.cms.

KOPRI,
http://www.kopri.re.kr/www/research/outcome_2008/outcome_2008_3rd/outcome_2008_3rd.cms.

KOPRI, http://www.kopri.re.kr/www/whypolar/researchhistory/researchhistory.cms.

KOPRI, *Mid-term Strategic Plan (2009~2014),* Incheon: KOPRI, 2009.

KOPRI, *The 20 Years History of the King Sejong Station*, Incheon: KOPRI, 2008.

KORDI "Antarctica and Science and Technology in the 21st Century" KORDI, 2000,
http://oceanus.hhu.ac.kr/ice/resinfo/news2000_6a.htm.

KORDI, http://www.kordi.re.kr/chongseo/vol7/vol7_17.asp.

Korea Association for Deep Ocean Minerals Development ,
http://www.kadom.or.kr/korea/business/business_01_01.asp.

Korea Meteorological Administration, A*nalysis of Seismic Source and Crustal Quality Factors*, Seoul: Korea Meteorological Administration, 2009.

Korean Intellectual Property Office, http://link.kipris.or.kr/link/APP_link/APP_PATENT.jsp.

Korean Presidency, "The collection of President Lee's speeches (1)," *Korean Presidency*, No 208, 2009, p.289-290.

KOSAP, http://kosap.or.kr.

KOSAP, http://kosap.or.kr/business5.html.

Kwak Seungjun, Chairman of Presidential Council for Future and Vision, Opening Speech for Global Korea 2010, http://www.globalkorea2010.kr.

Kwak Yung-shil, "Analysis of Forcing Terms Determining the Thermospheric Wind Vortices at High Latitudes," *The Journal of the Korean Space Science Society* Vol.25, No.4, 2008, pp. 415-424.

Kyunghyang , Interview with Hong Seokha, Leader of the Antarctic Expedition, "남극은 무한한 가능성의 대륙," ("Antarctica, the continent of limitless potential,") *Kyunghyang*, August 22, 1985.

Kyunghyang "21 세기 국정운영방향 제시," ("The policy direction in the 21st century,') *Kyunghyang*, November 18, 1994.

Kyunghyang "707 대호호 남빙양 새우 2 차 조업성공," ("707 *Daehoho* succeeded in catching Antarctic krills for the second time,") *Kyunghyang*, March 10, 1982.

Kyunghyang "거대과학과 국민합의," ("Big science and public consensus,") *Kyunghyang*, May 22, 1987.

Kyunghyang "고위관리 남극안가," ("No high-ranking officials go to Antarctica,") *Kyunghyang*, January 8, 1988.

Kyunghyang "과학계 대 공산권 교류 활발추진," ("The Science circle actively cooperates with the communist blocs,") *Kyunghyang*, January 13, 1989.

Kyunghyang "남극 비준서 조기기탁 공외무 남극회의 연설," ("Kong Nomyung, the Minister of Foreign Affairs, delivered his opening speech in the Seoul ATCM,") *Kyunghyang*, May 16, 1995.

Kyunghyang “남극대원 故전재규씨 '의사자' 결정,” (“Jun Jaekyu as a ‘uisaja’,”) *Kyunghyang*, December 18, 2003.
Kyunghyang “남극에 제 2 기지/해양부 추진/2000 년께 착공 예정,” (“Ministry of Maritime Affairs and Fisheries begins to build the second Antarctic station in 2000,”) *Kyunghyang*, September 6, 1996.

Kyunghyang “남극원정 남북대원 정부 접촉승인,” (“The government permits the contact between South and North Korean researchers in Antarctica,”) *Kyunghyang*, March 1, 1990.

Kyunghyang “남극점 지진계 설치 참여 박용철연구원 ‘남극을 보면 지구 미래가 보인다’,” (“Park Yongchul who installed a seismograph in the geographic South Pole, says ‘the future of the earth can be seen through Antarctica’,”) *Kyunghyang*, January 11, 2008.

Kyunghyang “남극조약가입 33 번째로,” (“South Korea, the 33rd member of the Antarctic Treaty,”) *Kyunghyang*, December 3, 1986.

Kyunghyang “남극진출 기념우표,” (“The memorial stamps for entering into Antarctica,”) *Kyunghyang*, November 27, 1987.

Kyunghyang “뉴스 꾸러미 / 故전재규대원 고향서 촛불집회,” (“A candlelight vigil in Jun Jaekyu’s hometown,”) *Kyunghyang*, December 16, 2003.

Kyunghyang “만년빙 애국가로 깨어나다,” (“The Korean national anthem wakes up the polar icecaps,”) *Kyunghyang*, January 1, 1988.

Kyunghyang “미군 '여중생치사' 재판시작,언론에 첫공개...혐의 美병사 무죄주장,” (“The trial on the accident caused by a US armoured vehicle begins…The US soldier insists on his being innocent,” *Kyunghyang*, November 19, 2002.

Kyunghyang “미래의 자원기지 확보,” (“Securing a future resources base,”) *Kyunghyang*,

December 3, 1986.

Kyunghyang “박대통령 큰영애 아주 보도 사진전 탐험장비전 참관,” (“President Park attended a photo exhibition of Arctic exploration,”) *Kyunghyang*, December 7, 1978.

Kyunghyang “부시 사과 "여중생사망 슬픔과 유감", 美대사 통해 메시지 전달,” (“President Bush sent a message through the US ambassador to Korea that ‘I’m sorry about the loss of the girls’,”) *Kyunghyang*, November 28, 2002.

Kyunghyang “서울서 열린 국제해양법 워크샵, 해양 새 질서를 찾는다,” (“The Seoul Workshop for the international maritime law is shaping a new maritime order,”) *Kyunghyang*, July 6, 1981.

Kyunghyang “세계화 구체방안 교통정리,” (“Concrete plans for *Segyehwa* ,”) *Kyunghyang*, November 23, 1994.

Kyunghyang “세계화 기구, 체제 지체없이 마련을,” (“It is urgent to establish organisations and systems for *Segyehwa,”) Kyunghyang*, November 23, 1994.

Kyunghyang “세계화는 제도 개혁 부터,” (“*Segyehwa* starts from a systemic reform,”) *Kyunghyang*, November 18, 1994.

Kyunghyang “자원개발 참여하게 남극조약 가입추진, 정부 비공산 회원국에 희망각서,” (“The government attempts to join the Antarctic Treaty for resources development, submitting a letter of intent to the non-communist member nations,”) *Kyunghyang*, March 11, 1978.

Kyunghyang “적자 뻔해 요지부동,” (“No profit, no operation,”) *Kyunghyang*, April 12, 1980.

Kyunghyang “전 대통령 남극기지와 첫 통화,” (“President Jun made the first phone call

to the Antarctic Station,") *Kyunghyang*, February 17, 1988.

Kyunghyang "정부 제 3 국 통해 회신대기 '북양 계속 조업 희망' 소에 한국입장 전달," ("The government advising the Soviet Union about its position on the north-sea fisheries and waiting for a reply through a third party,") *Kyunghyang*, December 27, 1976.

Kyunghyang "창경원에 남극의 새 가족펭귄 두 쌍 도입" ("Two couples of Antarctic penguin introduced to Chankyungwon,") *Kyunghyang*, March 29, 1974.

Kyunghyang "토론 끝내고 세계화 실천에 가속," ("No more discussion for *Segyehwa* , it's time to act,") *Kyunghyang*, January 26, 1995.

Kyunghyang "통한의 회항 북양선단, 김송웅 선장을 만났더니," ("A bitter return of *Bookyangsundan*,Interview with Captain Kim Song-woong,") *Kyunghyang*, March 5, 1977.

Kyunghyang "한국 남극기지 빨리세워야," ("It is urgent to build an Antarctic base,") *Kyunghyang*, February 13, 1987.

Kyunghyang "해양시스템 안전연구소 고창두 박사 "국내최초 쇄빙선 제작 故전재규대원 기릴터"("Dr. Ko Chang-doo from the Maritime and Ocean Engineering Research Institute (MOERI) talks about the first icebreaker and Jun Jaekyu,") *Kyunghyang*, December 8, 2004.

Lee Chul-han, "A research on Public Relations for National Image Improvement," *Dongkook University, Sahoi Kwahak Yungoo* Vol.15, No.2, 2009, p.157.

Lee Dong-hoon, "Investigation Results of National Brand Index," *Samsung Economic Research Institute, Issue Paper*,2009, p.1.

Lee Hong-gum, "The future of big science: Polar Research as a big science," *Science and Technology Policy Institute, Future Horizon Summer 2010*, 2010, p.4-5.

Lee Honggum, President of KOPRI, “Antarctica, a natural proving ground full of resources,” *The Newsis*, March 5, 2008.

Lee Honggum, President of KOPRI, “Greetings,” http://www.kopri.re.kr/index.jsp.

Lee Hong-gum, President of KOPRI, “Pay more attention to *Araon* to be a leading polar research country,” *Dong-A Daily*, September 14, 2009.

Lee Honggum, President of KOPRI, Interview with the Korean Federation of Science and Technology Societies, May 28, 2007.

Lee Honggum, President of the KOPRI, “[과학세상]극지 누빌 우리의 쇄빙연구선,” (“Our icebreaker wihich will sail in the polar regions,”) *Dong-A Daily*, May 21, 2009.

Lee Jae-hak, *A study on the development of key elements for monitoring and prediction of the climate change*, Seoul: Ministry of Maritime Affairs & Fisheries, 2006.

Lee Joo-sam, “The distribution of vegetation of the lichens on the Barton Peninsula of King George Island ,” *KORDI, Korea Polar Research* Vol.3, No.1, 1992, pp.27-34.

Lee Ju-han, “GPR investigation of glacier on Livingstone Island, Antarctica,”*2005 Thesis Collection, of the Korean Society of Earth and Exploration Geophysicists*, 2005, pp.151-154.

Lee Jung-hyun, “Characterization of a Psychrophilic Metagenome Esterase EM2L8 and Production of a Chiral Intermediate for Hyperlipemia Drug,” *Korean Journal of Microbiology and Biotechnology* Vol.37, No.2, 2009, pp.118-124.

Lee Ki-yung, *Phylogenetic and Taxonomic Analyses of Aerobic Bacteria Isolated from the Antarctic and Arctic Coastal Seawaters*, Incheon: Inha University, 2008.

Lee Sang-hoon., *The Studies on Natural Environment and Conservation of Polar Region*, Ahnsan: KORDI, 2000.

Lee Sang-shik, “The Historical Background of the 5.18 Prodemocracy Movement,” *Hyangto Moonhwa Gaebal Hyupuihoi, Hyangto Moonhwa* Vol.22, , 2002, pp.7-15.
Lee Won-hee, “The big sciences and technologies we should note,” *Samsung Economic Research Institute, CEO Information* No.719, 2009, p.14.

Lee Yun-ho, *Research on the Development of Antarctic Marine Living Resources*, Ahnsan: KORDI, 2000.

Mail Kyungje “5 년간 시험조업, 수산청 남극새우 기업화추진,” (“Five years test operation, the Fishery Agency attempts to commercialise Antarctic krill,”) *Mail Kyungje*, March 15, 1979.

Mail Kyungje “기대큰 한민족 과기 협력,” (“High expectations on the cooperation of the two Koreas in the field of science and technology,”) *Mail Kyungje*, June 12, 1991.

Mail Kyungje “남극새우 어장 조사선 출항,” (“A research vessel launched to the Antarctic Ocean to investigate the krill fishery,”) *Mail Kyungje*, December 7, 1978.

Mail Kyungje “남극수산 올겨울 남극출어 계획좌절,” (“The test operation of Namkuksusan in the Antarctic Ocean is cancelled ,”) *Mail Kyungje*, November 20, 1979.

Mail Kyungje “남극자원 보존협약가입신청서 제출,” (“A letter of application submitted to Convention on the Conservation of Antarctic Marine Living Resources,”) *Mail Kyungje*, March 6, 1984.

Mail Kyungje “남극조약당사국회의 내년 서울서 개최,” (“ATCM is scheduled to be held in Seoul next year,”) *Mail Kyungje*, April 23, 1994.

Mail Kyungje “남극환경 보호논의, 한, 중공, 소, 동독 등,” (“Korea, China, the Soviet Union and East Germany discuss the Antarctic environmental preservation,”) *Mail Kyungje*, April 12, 1988.

Mail Kyungje "남북 과기교류 적극 추진," ("The South and North actively cooperates in the field of science and technology,") *Mail Kyungje*, January 30, 1991.
Mail Kyungje "남북 과학자들 첫 토론장," ("The first discussion between South and North Korean scientists,") *Mail Kyungje,* August 20, 1991.

Mail Kyungje "남빙양 출어지원 87 년까지 연장," ("The government's subsidy for fishing in the Antarctic Ocean will be extended to 1987,") *Mail Kyunje*, June 19, 1984.

Mail Kyungje "남빙양 크릴잡이 중단위기," ("The krill catch in the Antarctic Ocean is going to stop,") *Mail Kyungje*, October 13, 1987.

Mail Kyungje "내년에 대형어선 217 척 건조, 수산청," ("The Fishery Agency builds 217 large vessels next year,') *Mail Kyungje*, December 19, 1978.

Mail Kyungje "단신," ("Short articles,") *Mail Kyungje*, March 5, 1986.

Mail Kyungje "수산청 새 어장 개척 논의, 원양어업대책회의 개최," ("The Fishery Agency discussing about developing new fisheries and convening a council of the deep-sea fishery,") *Mail Kyungje*, December 28, 1976.

Mail Kyungje "우리나라가 남극 `펭귄마을` 지킨다," ("We preserve *'Penguin Village'* in Antarctica,") *Mail Kyungje*, April 19, 2009.

Mail Kyungje "인터뷰 서울 남극조약협의 당사국 회의 의장," ("Interview with the chairman of the Seoul ATCM,") *Mail Kyungje*, May 8, 1995.

Mail Kyungje "정부 사업계획 타당성 없어," ("Lack of validity in the government enterprises,") *Mail Kyungje*, October 19, 1988.

Mail Kyungje "조약위 당사국 되는 것이 선결과제," ("Becoming a consultative member

of the Antarctic Treaty is the top priority,") *Mail Kyungje*, March 6, 1987.

Mail Kyungje "주 수산청 차장 향이 수산위 참석," ("Ju Hongjang, the Deputy Head of the Fishery Agency attending the FAO,") *Mail Kyungje,* June 9, 1978.

Mail Kyungje "태평양회담 실무작업추진, 대한해협 봉쇄대책 있나 질의," ("The Pacific Meeting being promoted at a working level, A question raised on ways to block the Straits of Korea,") *Mail Kyungje,* April 27, 1983.

Mail Kyungje "한중수교와 양국 경제," ("The establishment of diplomatic ties between Korea and China, and their economy,") *Mail Kyungje,* August 24, 1992.

Mail Kyunje "최고 경영자 정훈목 현대건설 사장 선진국 건설시장 도전 본격채비," ("Jung Hoonmok, Director of Hyundai Construction, challenges the construction market of advanced countries,") *Mail Kyunje*, March 11, 1988.

Ministry of Commerce, Industry and Energy, *A research on ways to improve brand value of nation and enterprise*, Seoul, 2003.

Ministry of Education, Science and Technology *The First and Second Phase Reports on Arctic Air Environment and Mineral Resources*, Seoul, 2003 and 2004.

Ministry of Education, Science and Technology, *577 Initiative*, Seoul, 2008.

Ministry of Education, Science and Technology, *A project on energy source technology related to climate change treaty*, Seoul, 1998.

Ministry of Education, Science and Technology, *A Study on the genetic changes of Antarctic Creatures by Environmental Change and Pollution*, Seoul, 2001.

Ministry of Education, Science and Technology, *Application of OSMI Data for Fisheries Oceanography and Calibration & Validation* and *The Final Report on the Enterprise of Remote*

Exploration Technology Development, Seoul, 2002.

Ministry of Education, Science and Technology, *The First to Eighth Reports* on summer and winter activities of the Antarctic science research group in 1988 to 1995.

Ministry of Education, Science and Technology, *The First, Second and Third Year Investigation Reports* on the environment around the King Sejong station in 1988, 1989, and 1990, *The First, Second and Third Year Research Reports* on the property and preservation of Antarctic environment in 1994, 1995, and 1996.

Ministry of Environment and Ministry of Land, Transport and Maritime Affairs, 쇄빙연구선 아라온호 본격 건조 실시(*Araon, the Icebreaker, is Ready to Build*) , Seoul, 2008.

Ministry of Environment, *The Current Situation of Environment-related Laws and International Treaties*, Seoul, 2008.

Ministry of Foreign Affairs and Trade, *Announcement No. 2003-11*, Seoul, April 26, 2003.

Ministry of Foreign Affairs and Trade, *Diplomacy Journal for January 2009*, Seoul, 2009.

Ministry of Foreign Affairs and Trade, *The General Outlook of Antarctica*, Seoul, 23, 2008.

Ministry of Foreign Affairs and Trade, *The Issue of Antarctic Sovereignty*, Seoul, October 22, 2007.

Ministry of Knowledge Economy, http://www.mke.go.kr/community/core/core0110.jsp.

Ministry of Knowledge Economy, http://www.1.mke.go.kr/common/jsp/print.jsp.

Ministry of Knowledge Economy, http://www.mke.go.kr/news/bodo/bodoView.jsp?seq=59236&pageNo=1&srchType=1&srchWord=&pCtx=1.

Ministry of Knowledge Economy, http://www1.mke.go.kr/language/eng/about/history.jsp.

Ministry of Land, Transport and Maritime Affairs, *A Private Organisation Supports the Polar Research*, Seoul, 2006.

Ministry of Land, Transport and Maritime Affairs, http://blog.naver.com/mltm_ocean?Redirect=Log&logNo=60095328924.

Ministry of Land, Transport and Maritime Affairs, 북극연구의 메카, 다산기지(*The Mecca of Arctic Research-the Dasan Station)*, Seoul, 2009.

Ministry of Maritime Affairs & Fisheries *Development of an Advanced Deep-sea Unmanned Underwater Vehicle*, Seoul, 2007.

Ministry of Maritime Affairs & Fisheries, *The Second Station on the Antarctic Continent*, Seoul, 2007.

Moonhwa Daily "`극지연구소` 독립기관으로 출범 - 자율적 예산운영·편성권," ("KOPRI launched as an independent research institute,") *Moonhwa Daily*, May 13, 2004.

Moonhwa Daily "<취재수첩>`남극기지 조난` 정부 뭘했나," ("What has the government done about the accident in Antarctica?") *Moonhwa Daily*, December 10, 2003.

Moonhwa Daily "남극 봉우리에 '백두''한라'이름 붙인다/세종기지 자체지도 작성," ("Naming Antarctic mountaintops 'Hanla', 'Baekdoo'/ Making our own map,") *Moonhwa Daily*, January 15, 1997.

Moonhwa Daily "남극 세종기지 대원 조난 / '이동장비 고무보트가 고작 조난사건은 예고된 人災'," ("The King Sejong Station researchers travel by rubber raft –it was a man-made disaster,") *Moonhwa Daily*, December 9, 2003.

Moonhwa Daily "남극 세종기지 대원 조난 / 얼음깨며 항해...극지연구 필수," ("The King Sejong Station researchers travel breaking ice themselves,") *Moonhwa Daily*, December 9, 2003.
Moonhwa Daily "남극사망 전재규씨 국립묘지안장 논란 / 유족 '국가발전에 기여', 정부 '선례가 없다'," ("The debate on Jun Jaekyu's burial in the National Cemetery/ 'his contribution to the nation' or 'no precedence',") *Moonhwa Daily*, December 13, 2003.

Moonhwa Daily "미군 장갑차에 치여 길가던 여중생 둘 숨져," ("Two Korean middle school students were killed by a US armoured vehicle,") *Moonhwa Daily*, June 14, 2002.

Moonhwa Daily "실종 3 명도 구조됐다 - 남극 세종기지 조난 50 시간만에 넬슨섬에서," ("Three missing researchers rescued from Nelson Island after 50 hours,") *Moonhwa Daily*, December 9, 2003.

Naeil Shinmoon "남`북극 누빌 '쇄빙선' 이름 지어주세요," ("Name the icebreaker to sail in Antarctica and the Arctic,") *Naeil Shinmoon*, October 24, 2007.

NRF, http://www.nrf.go.kr/html/en/about/about_02_01.html.

Ocean Thinker, "The Construction of the Antarctic Continental Station,", *Haeyang Jungbo* No.32, 2007, pp.51-54.

Office of Global Environment, Ministry of Environment *The Plan on the Participation in the International Workshop for the Appointment of Antarctic Specially Managed Area (ASMA)*, Seoul, April 17, 2008.

Office of Global Environment, Ministry of Environment, *Promotional Materials for Antarctic Environmental Preservation*, Seoul, April 17, 2008.

Office of global Environment, Ministry of Environment, *The Announcement of Conference*, Seoul, April 23, 2009.

Office of Global Environment, Ministry of Environment, *The Early Environmental Assessment on the Renovation of the King Sejong Station in Antarctica,* Seoul, October 10, 2007.

Office of Global Environment, Ministry of Environment, *The Results of the Interview with the Representatives of the Korea Federation for Environmental movements and the Antarctic and Southern Ocean Coalition*, Seoul, October 9, 2007.

Oh Ki-se, 남극탐험(Antarctic Exploration), Sea Explores of Korea, May 29, 2001, http://www.sekva.or.kr/ttboard/ttboard.cgi?act=view&code=4&bname=OBM00JD&page=5.

Oh Won-chul, *박정희는 어떻게 경제강국 만들었나 (How did Park build a strong economy?)*, Seoul: Dongsuhmoonhwasa, 2006.

Park Byung-kwon, *The Research on Natural Environments and resources of Antarctica*, Ahnsan: KORDI, 1992.

Park Gab-dong, *North Korea, Evil Nation*, Seoul: Seoul Choolpansa, 1997.

Park Jong-min, "A study on the actual work of the Korean Overseas Information Service and the committee of national image," *Journal of Korean Association for Public Administration* Vol.37, No.2, 2003, pp.421-444.

Park Yung-sook, "High-resolution diatom investigation on core sediments in Bransfield Straight," *Journal of the Geological Society of Korea* Vol.45, No.1, 2009, pp.1-8.

Park Yung-sook, "The Core Sediment on the South Orkney Islands," *The Journal of Korea Institute of Geoscience and Mineral Resources* Vol.43, No.1, 2007, pp.33-42.

President Lee Myung-bak, 2010 Administrative Policy Speech, http://www.tagstory.com/video/video_post.aspx?media_id=V000463709&feed=NV, October 25, 2010.

President Lee Myungbak, Keynote Speech for Global Korea 2010, http://www.globalkorea 2010.kr.

Presidential Council for Future and Vision, *Korea launches Global Green Growth Institute (GGGI)*, http://www.apecvc.or.kr/?p_name=information&sub_page=announcement&gotopage =2&query=view&unique_num=226, May 20, 2010.

Ryu Ji-yun, "Single-particle Characterization of Summertime Arctic Aerosols Collected at Ny-Alesund, Svalbard ," *Proceeding of the 46th Meeting of the Korean Society for Atmospheric Environment, Seoul, 2008* Seoul: KOSAE, 2008.

Saemaul , "The Repository of Future Resources; Antarctic Development," *Saemaul* No.155, March 1987, pp.60-61.

SAESAYON, *Conditions for opening a new society*, Seoul: Shidaeui chang, 2008.

SBS TV News, August 15, 2008.

SBS, President Lee's Administrative Policy Speech, *SBS*, October 27, 2008.

Science and Technology Policy Institute, "2010 Science and Technology Policy,", *STEPI Insight*
No.37, 2010.

Segye Daily "[현장메모] '의욕'만 앞선 남극기지 건설,") ("Too aggressive to build an Antarctic base,") *Segye Daily*, June 30, 2007.

Segye Daily "남극 '크릴', 원양업계 벤처 대상 부상," ("Antarctic krill, the deep-sea fishery ventures,") *Segye Daily*, December 13, 2000.

Segye Daily "여야 3 당, 새천년 정국구상-총선전략," ("The ruling and opposition parties making strategies for the general election,") *Segye Daily*, January 3, 2000.

Segye Daily "온실가스 감축 확정… 2020 년까지 30% ↓," ("Greenhouse gas will be reduced by 30% by 2020,") *Segye Daily*, November 18, 2009.
Seoul Shinmoon "김 대통령 남극세종기지 김예동 대장과 통화," ("President Kim talked to Kim Ye-dong at the King Sejong Station on the phone,") *Seoul Shinmoon*, September 8, 1996.

Seoul Shinmoon "남극 세종기지 조난사고 사망 故전재규 연구원 국립묘지 안장·의사자 인정 논란," ("The debate on Jun Jaekyu's burial in the National Cemetery,") *Seoul Shinmoon*, December 15, 2003.

Seoul Shinmoon "남극 쇄빙선 1 만톤급으로," ("Building a 10,000 ton icebreaker,") *Seoul Shinmoon*, February 9, 2004.

Seoul Shinmoon "동남아 오염 막게 남북환경공동체 추진," ("Establishing an environmental community of South and North Korea to prevent pollution in Southeast Asia,") *Seoul Shinmoon*, June 3, 1995.

Seoul Shinmoon "美軍 장갑차사건 진실은/ 통학로 통행 사전통보규정 어겨," ("What is the truth about the accident caused by a US armoured vehicle? / The Service Regulations of United States Forces Korea was broken,") *Seoul Shinmoon*, July 12, 2002.

Seoul Shinmoon "장갑차美軍 모두 무죄," ("The two US soldiers are found innocent,") *Seoul Shinmoon*, November 23, 2002.

Shin Hyung-chul, *Research on the Development of Antarctic Marine Living Resources*, Ahnsan: KORDI, 2007.

Shin Soo-chul, "High value-added special ships and related technology," *Journal of the Society of Naval Architects of Korea* Vol.41, No.2, 2004, pp.4-24.

Son Jung-mok, "Jun Government's 3s Policy," *Public Officials Benefit Assosiation, Doshi*

Moonje Vol.39, No.423, 2004, pp.103~105.

Song Jae-yong, Professor of Business School, Seoul National University, "Simple manufactuing industries cannot survive a knowledge economy," *Chosun Weekly Biz*, July 27, 2007.

Song Won-oh, "Onuriho," *Hangman 45*, 1992, pp.34-40.

Suh Jung-won, "Korea Discount: Diagnosis and Remedy," *Korean Securities Association, Asia-Pacific Journal of Financial Studies* Vol.36, No.4, 2007, pp.621-655.

Sung Yun-hwan, "Symposium on IT-SW policy," *Hankookjungbogisoolhaksooldancheyunhaphoi*, 2009, pp.11-26.

Uh Yundae, Chairman of PCNB, "The Korean national brand value underestimated by 30%," *The Asia Economy*, March 17, 2009.

Ye Sung-soo, *Molecular/cellular and ecophysiological study of double-protectant bioactive materials derived from arctic organisms and their isospecies*, Inje: Inje University, 2010.

Yeonhap News "李대통령 'GGGI, 저탄소 지구촌 싱크탱크될것'," ("President Lee says 'GGGI will play a role as a think-tank in creating a low carbon global village',") *Yeonhap News*, December 18, 2009.

YTN TV News " 한-칠레 정상회담...남극 개발 논의" ("Korea-Chile Summit…discuss Antarctic development") *YTN TV News*, 2009-11-11.

Yu Jae-woong, *National Image: theory, strategy and programme*, Seoul: Communication Books, 2008.

Yu Kyu-chul, "The Sediment Drift by Glacier Cycle in the Bellingshausen Sea," *The Journal of Korea Institute of Geoscience and Mineral Resources* Vol.44, No.1, 2008, pp.15-31.

Yu Sang-ryeol, *Development of basic technology for Microbial diversity and its application; Improving construction and screening of metagenome library*, Seoul: Seoul National University, 2005.
Yum Sung-won, "A study on the trend of Korea national image research," *Korea Advertising Society, Kwangohak Yungoo* Vol.14, No.3, 2003, pp.87-117.

Yun Ho-il, *Paleoceanography and Paleoclimate Study in the Antarctic for the Preparation of Global Climate Change Agreement in the 21st Century*, Ahnsan: KORDI, 2002

Yunhap News "국내 학계 남극운석 첫 탐사연구," ("The first exploration of Antarctic meteor by the domestic academic circle,") *Yunhap News*, October 29, 2009.

Yunhap News "한.중, '자원의 보고' 극지개발 손잡는다," ("Korea and China cooperate for Antarctic resources development,") *Yunhap News*, May 27, 2008.

Yunhap News "한-중, '자원의 보고' 극지개발 손잡는다" ("Korea and China hold each other's hands to develop the Polar Regions which are repositories of resources,") *Yunhap News*, May 27, 2008.

Interview

Ahn Changyong, Secretary of Office of Industrial Economic Policy, the Ministry of Knowledge Economy, June 1, 2010.

Cho Eunhye, Researcher of Office of Policy Promotion, NRF, June 10, 2010.

Choi Doyung, Manager of Big Science Policy Office, Ministry of Education, Science and Technology, April 23, 2010.

Choi Sunwoong, Specialist, Policy Development, KOPRI, October 27, 2010.

Ha Taejung, Captain of Technology Fusion Research Team, New Growth Engines Research Centre, Science and Technology Policy Institute, June 23, 2010.

Huh Soondo, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.

Jang Soongun, Policy Advisor of KOPRI, May 13, 2010.

Jeon Seungyoul, Team Leader of Public Relations, KOPRI, October 27, 2010.

Jin Dongmin, [Head] Principal Administrative Associate of Department of Policy Development, KOPRI, February 19, 2010.

Jin Yunggun, Principal Researcher of Division of Polar Earth-System Sciences, KOPRI, August 17, 2010.

Jo Jiyi, Secretary of Division of International Law in Ministry of Foreign Affairs, April 22, 2010.

Jung Hyunhee, Principal Researcher of Division of the Basic Research in Science and Engineering, NRF, June 21, 2010.

Kang Hyunwoong, Manager of Big Science Foundation Division, the Ministry of Education, Science and Technology, June 3, 2010.

Kim Hyunok, Deputy Director, Division of Climate Change Response, Green Growth Committee, October 28, 2010.

Kim Sungjung, Head of Division of Polar Climate Research, KOPRI, August 4, 2010.

Kim Woohyun, Expert Advisor, Division of Climate Change Response, Green Growth Committee, October 27, 2010.

Kim Yedong, Principal Researcher of KOPRI and Former Chairman of Asian Forum for Polar Sciences (AFOPS), April 18, 2010.

Lee Bangyong, Principal Researcher of Division of Polar Climate Research, KOPRI, August 6, 2010.

Lee Changwoo, Managing Director of Special Ship Sales Department, Hanjin Heavy Industries, August 25, 2010.

Lee Chanu, Captain of Ship Operation Team, KOPRI, August 25, 2010.

Lee Hyungun, [Team Leader] Senior Specialist of Planning & Budget Team, KOPRI, March 26, 2010.

Lee Jinyong,Team Leader of Office of Research & Management, KORDI, March 26, 2010.

Lee Jongik, Principal Researcher of Polar Global System Research Department, KOPRI, May 14, 2010.

Lee Sanghoon, Principal Researcher of Division of Polar Climate Research, KOPRI, August 17, 2010.

Lee Seoktae, Manger, Bureau of Culture and Citizen, Presidential Council on National Branding, October 28, 2010.

Lee Yukyung, Head of Division of Polar Bio Sciences, KOPRI, April 4, 2010.

Oh Sungbae, Security of Office of Science&Technology Policy, the Ministry of Education, Science and Technology, June 10, 2010.

Park Hyun, Senior Researcher of Division of Life Sciences, KOPRI, August 17, 2010.

Park Sunghwa, Director for Planning and Management, PCNB, May 11, 2010.

Shin Sunglan, Secretary of KOSAP, March 26, 2010.

Shin Yunsung, Ambassador of Climate Change, the Ministry of Foreign Affairs and Trade, October 27, 2010.

Sun Minjung, Principal Researcher of Korea Biotechnology Industry Organisation, June 23, 2010.
Um Kiho, Manager of Maritime Territory Development Office, Ministry of Land, Transport and Maritime Affairs, April 14, 2010.

Um Kiho, Manager of Maritime Territory Development Office, Ministry of Land, Transport and Maritime Affairs, March 16, 2010.

Yang Eunjin, Principal Researcher of Polar Climate Research Department, KOPRI, May 13, 2010.

Yang Heechul, Principal Researcher of Ocean Policy Research Division, Korea Ocean Research & Development Institute, May 18, 2010.

Yu Donyun, Principal Specialist of Department of Antarctic Continental Station Construction, KOPRI, August 25, 2010.